

GJO-2001-223-TAR
MAC-LMNT 1.1.1-2
Copy Number _____

**Monticello Long-Term Surveillance and Maintenance
Operating Procedures
for
Supplemental Standards Properties**

Volume II

April 2002

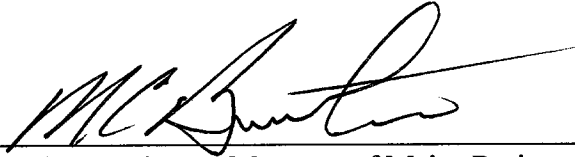
U.S. Department of Energy
Grand Junction Office
Grand Junction, Colorado

Prepared by
MACTEC Environmental Restoration Services, LLC
Under DOE Contract DE-AC13-96GJ87335
Grand Junction, Colorado

Project Number LTS-111-0038-02-000
Document Number S00387

Signature Page

Monticello Long-Term Surveillance and Maintenance Operating Procedures for Supplemental Standards Properties

Issued by:

Michael C. Butherus, Manager of Major Projects
MACTEC-ERS

4/30/02

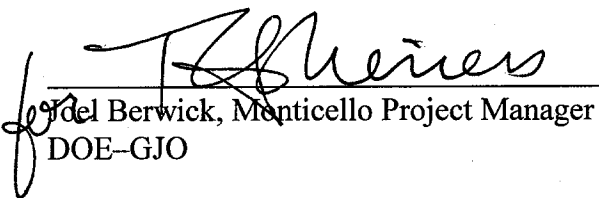
Date

Project Approval:

Carl Jacobson, LTSM Program Manager
MACTEC-ERS

4/30/02

Date

Concurrence:

Joel Berwick, Monticello Project Manager
DOE-GJO

5/2/2002

Date



Art Kleinrath, DOE-GJO LTSM Project Manager

May 2 2002

Date

Contents

Acronyms	ix
Glossary	xi
Executive Summary	xv
LTSM Checklist for City Streets and Utilities.....	xvi
LTSM Checklist for Highways 191 and 666 Rights-of-Way	xvii
LTSM Checklist for MS-00176-VL	xviii
LTSM Checklist for Government-Owned Piñon/Juniper Properties.....	xix
LTSM Checklist for [OU II] Montezuma Creek Soil and Sediment Properties.....	xx
 1.0 Manual Overview	 1-1
1.1 Information in this Manual.....	1-1
1.2 References	1-2
2.0 Routine Surveillance	2-1
2.1 Purpose	2-1
2.2 Scope	2-1
2.3 Definitions.....	2-1
2.4 Responsibilities	2-2
2.5 Routine Surveillance Procedures	2-2
2.5.1 City Streets and Utilities	2-2
2.5.2 Highways 191 and 666 Rights-of-Way.....	2-5
2.5.3 Privately Owned PiZon/Juniper Property	2-7
2.5.4 Government-Owned PiZon/Juniper Properties	2-8
2.5.5 Montezuma Creek Soil and Sediment Properties [OU II]	2-9
2.6 Training	2-11
2.7 Records.....	2-12
2.8 References	2-12
3.0 Radiological Surveys.....	3-1
3.1 Purpose	3-1
3.2 Scope	3-1
3.3 Definitions.....	3-1
3.4 Responsibilities	3-1
3.5 Procedure.....	3-2
3.5.1 Instrument Response Checks	3-2
3.5.2 Background Determination.....	3-6
3.5.3 Gamma Scan	3-7
3.5.4 Delta Measurements	3-9
3.5.5 Property-Specific Procedures	3-11
3.5.6 Areas With Anomalous Backgrounds.....	3-15
3.5.7 Documentation.....	3-15
3.6 Training.....	3-15
3.7 Records.....	3-16
3.8 References	3-16
4.0 Radiologically Contaminated Materials.....	4-1
4.1 Purpose/Scope	4-1
4.2 Definitions.....	4-1
4.3 Responsibilities	4-1

4.4	Procedure for Handling Radiologically Contaminated Materials	4-1
4.4.1	Radiologically Contaminated Materials with Less Than 130 pCi/g Ra-226 Concentration	4-2
4.4.2	Radiologically Contaminated Material with Greater Than Or Equal To 130 pCi/g Ra-226 Concentration; Easily Removed Material	4-2
4.4.3	Radiologically Contaminated Materials with Greater Than Or Equal To 130 pCi/g Ra-226 Concentration; Difficult to Remove Material	4-6
4.4.4	Documentation and Review	4-8
4.5	Training	4-8
4.6	Records	4-8
4.7	References	4-9
5.0	Suspect Hazardous Substances	5-1
5.1	Purpose	5-1
5.2	Scope	5-1
5.3	Definitions	5-1
5.4	Responsibilities	5-2
5.5	Procedures	5-2
5.5.1	Radiologically Contaminated Suspect Hazardous Substances	5-4
5.6	Training	5-5
5.7	Records	5-5
5.8	References	5-6

Appendices

Appendix A	City of Monticello Streets and Utilities Long-Term Surveillance and Maintenance Plan
Appendix B	Highways 191 and 666 Rights-of-Way Within the City Limits of Monticello Long-Term Surveillance and Maintenance Plan
Appendix C	Piñon/Juniper Properties Long-Term Surveillance and Maintenance Plan
Appendix D	Restrictive Easement Area Along Montezuma Creek Long-Term Surveillance and Maintenance Plan

Figures

Figure 2-1.	Contingency Actions	2-3
Figure 3-1.	After-Calibration Source Response Check Data Sheet	3-3
Figure 3-2.	Daily Instrument Response Check Data Sheet	3-5
Figure 3-3.	Example of Recorded Readings—Before and During Excavations	3-8
Figure 3-4.	Delta Scintillometer Field Data Form	3-10
Figure 3-5.	Example of Recorded DataC After Excavation	3-12
Figure 4-1.	Radiological Access and Frisking Log	4-3

Plates will be provided upon request. Click [plates](#) to request

- Plate 1. City of Monticello Streets and Utilities Supplemental Standards Area
- Plate 2. Highways 191 and 666 Rights-of-Way Supplemental Standards Area
- Plate 3. MS-00176-VL Supplemental Standards Area
- Plate 4. Government-Owned Piñon/Juniper Properties Supplemental Standards Area
- Plate 5. Upper Montezuma Creek Supplemental Standards Area
- Plate 6. Middle and Lower Montezuma Creek Supplemental Standards Area

Acronyms

ARAR	applicable or relevant and appropriate regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cm	centimeters
cm ²	square centimeters
cps	counts per second
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
dpm	disintegrations per minute
EPA	U.S. Environmental Protection Agency
GERT	General Employee Radiation Training
GJO	Grand Junction Office
LTSM	Long-Term Surveillance and Maintenance
m ²	square meters
OU	Operable Unit
PCB	polychlorinated biphenyl
P/J	piñon/juniper
PPE	personal protective equipment
PID	photo ionization detector
pCi/g	picocuries per gram
RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
SARA	Superfund Amendments and Reauthorization Act
TSF	Temporary Storage Facility
μR/h	microroentgens per hour
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation

Glossary

Asbestos—Material that is harmful to human health or the environment and that is specifically defined and regulated under the Toxic Substances Control Act.

CERCLA Hazardous Substance—Material that is harmful to human health or the environment and that is specifically defined and regulated under CERCLA.

Delta ScintillometerC The ELB00018B delta-gamma scintillometer. The instrument measures soil Ra-226 concentrations in units of counts per second which may be converted to picocuries per gram (pCi/g).

Difficult to Remove Material—Radiologically contaminated material with a Ra-226 concentration > 130 pCi/g that cannot be easily removed using hand tools and having a volume > 1 cubic yard.

Easily Removed Material—Radiologically contaminated material with a Ra-226 concentration > 130 pCi/g that can be removed with a shovel or similar hand-operated tool and having a volume ≤ 1 cubic yard.

EPA StandardC The U.S. Environmental Protection Agency (EPA) “Radium in Soil Standard” found in 40 CFR 192 states that the Ra-226 concentration in soil shall not exceed 5 pCi/g above background in the first 15 cm of soil, averaged over 100 m², and shall not exceed 15 pCi/g above background in any subsequent 15-cm layer averaged over 100 m². As a conservative approach, only the 5 pCi/g surface standard will be applied during long-term surveillance and maintenance (LTSM) activities. Normal background in the Monticello area is 1.0 pCi/g, making the standard 6.0 pCi/g.

Field Recognition Criteria—Anomalous physical conditions that would lead an inspector to believe that material has been released that may be harmful to human health or the environment. These physical conditions may be observed via sensory perceptions (e.g., sight, odor, etc.) or with field screening equipment such as a photo ionization detector.

Gamma ScintillometerC An Eberline Model E-600 ratemeter with an external, crutch-mounted detector consisting of a 1.5-inch-thick by 1.5-inch-diameter sodium iodide crystal. This instrument reads in counts per second (cps) that may be converted to microrentgen per hour (μR/hr).

Habitable Structure—A structure intended for human habitation.

Hazardous Waste—Waste material that is harmful to human health or the environment and that is specifically defined and regulated under the Resource Conservation and Recovery Act (RCRA).

Hazardous Substances—For purposes of this document, the term “hazardous substances” includes CERCLA hazardous substances present in concentrations greater than EPA’s risk-based clean-up concentrations, hazardous waste, polychlorinated biphenyls (PCBs), and asbestos.

Information Repository—A working set of documents which contains the information required under CERCLA. The Information Repository is located at the Monticello Field Office and is available for review by EPA, Utah Department of Environmental Quality (UDEQ), and the public.

Inspection—Review and observation by a formally constituted team for the purpose of oversight, mobilized either at regular intervals or in response to specific concerns.

Major Excavation—Excavations that require the use of heavy motorized equipment to excavate into soil material beneath or adjacent to the city street, utility, or Highways 191 or 666 rights-of-way. For example, replacing or repairing a buried utility line, installing a culvert, replacing road base beneath a paved surface, or replacing fill material comprising an embankment would constitute a major excavation.

Minor Excavation—Excavations that can be made with hand tools or hand-operated mechanical tools (i.e., post-hole augers).

Observations—Data recorded in a formal manner suitable for communication, interpretation, or processing.

Photographic Material—35 millimeter negatives; self-developing film shall not be used for record material.

Planned Excavation—Excavations that are part of the annual budget and planning process for the city of Monticello and Utah Department of Transportation (UDOT); excavations that are included in the city's Street Improvement Master Plan or in UDOT's Statewide Transportation Improvement Plan or Spot Improvement Plan.

Polychlorinated biphenyl (PCB)—Material that is harmful to human health or the environment and that is specifically defined and regulated under the Toxic Substances Control Act.

Radiologically Contaminated Materials—Residual radioactive material resulting from U.S. Department of Energy (DOE)- related uranium and vanadium ore processing that contains Ra-226 concentrations exceeding background by more than 5 pCi/g in the surficial 15 cm of soil averaged over 100 m², or more than 15 pCi/g in successively deeper 15-cm layers.

Radiological Control Manager—The person, located at the Grand Junction Office, who leads and is responsible for the Radiological Protection Program; he/she must be qualified in accordance with the applicable *Radiation Protection Program Plan*.

Radiological Survey—To delineate and document the surface area and radionuclide activity in cps or $\mu\text{R/hr}$. The vertical extent and radionuclide concentrations in pCi/g may also be determined.

Record—Information or data on a specific subject collected and preserved in writing or other permanent form that has been verified and authenticated as complete and correct. Records may include photographs, photograph negatives, drawings, forms, reports, and record books.

Record Book—For the purposes of this procedure, record books will refer to the field notebooks kept by the Monticello LTSM Representative for each of the supplemental standards properties and the Temporary Storage Facility (TSF).

Spill—Any accidental release of petroleum products, hazardous substances, or radiologically contaminated material from packaging, containments, or transport vehicles.

Surveillance—The act of monitoring or observing to determine whether an item or activity conforms to specified requirements; routine observations that do not require the involvement of formal inspection teams.

Suspect Hazardous Substance—Any material that exhibits field recognition criteria that would indicate the material is potentially harmful to human health or the environment. Sampling and analysis has not been completed for suspect hazardous substances, therefore the material is “suspected” to be a hazardous substance.

Temporary Storage Facility (TSF)—A secure area located at the Monticello Office Complex where radioactive material and/or hazardous substances are stored in containers.

Transportation Incidents or Emergencies—Any spill, release, accident, medical situation, or potential situation that may occur while loading, unloading, or inspecting a vehicle for transport; any spill, release, accident, medical situation, or potential situation that may occur while transporting materials in a vehicle on public highways.

Unplanned Excavation—Excavations that are not planned but are necessitated by an emergency situation (e.g., a utility line break) or occur as a result of a natural event (e.g., a flood, storm, or subsidence event).

Working File Index—A computerized list of all documents that identifies the location of the documents.

End of current text

Executive Summary

The Monticello Mill Tailings Site and Monticello Vicinity Properties have been remediated by the U.S. Department of Energy (DOE) Grand Junction Office (GJO) in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. As part of the CERCLA process, DOE will continue to monitor the sites and conduct the Long-Term Surveillance and Maintenance (LTSM) activities, with oversight provided by the U.S. Environmental Protection Agency (EPA) Region VIII and the Utah Department of Environmental Quality (UDEQ), to ensure the following:

- compliance with applicable or relevant and appropriate regulations (ARARs),
- remedial actions taken remain protective of human health and the environment, and
- adequate information is collected for preparation of the CERCLA Five-year Review Report.

In compliance with the ARARs, contamination was left in place at certain properties that are known as “supplemental standards properties.” This manual, the *Monticello Long-Term Surveillance and Maintenance Operating Procedures for Supplemental Standards Properties* (Volume II), describes the procedures that will be followed by the DOE to monitor these properties.

Appendices in this volume also contain discussions of the operating procedures for City of Monticello streets and utilities, Highway 191 and 666 rights-of-way within the city limits of Monticello, piñon/juniper properties, and restrictive easement areas along Montezuma Creek.

LTSM Checklist for City Streets and Utilities

The Monticello LTSM Representative shall:

1. Inspect the city rights-of-way once a week for evidence of erosion and unauthorized excavations (see Section 2.5).
2. Once a week, obtain the schedule of planned excavations by calling the city of Monticello and requesting the excavation schedule from the Blue Stakes program (see Section 2.5).
3. Inspect the city rights-of-way after storm events that produce 2.8 inches or more of rain within a 24-hour period (see Section 2.5).
4. Conduct radiological surveys at each site of a major or minor, planned or unplanned excavation and at areas where soil has visibly eroded from the rights-of-way (see Sections 2.5 and 3.0).
5. When conducting radiological surveys, check for suspect hazardous substances (see Section 5.0).
6. Handle and transport radiologically contaminated materials to the Temporary Storage Facility in accordance with Section 4.0 of this manual and Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2001b), Sections 6.0 and 7.0.
7. Record notes and observations in the City Streets and Utilities Record Book (see *Long-Term Surveillance and Maintenance Administrative Manual* [DOE 2001a], Section 9.0).

LTSM Checklist for Highways 191 and 666 Rights-of-Way

The Monticello LTSM Representative shall:

1. Inspect the Highways 191 and 666 rights-of-way once a week for evidence of erosion and unauthorized excavations (see Section 2.5).
2. Once a week, obtain the schedule of planned excavations by calling the city of Monticello and requesting the excavation schedule from the Blue Stakes program (see Section 2.5).
3. Inspect the Highways 191 and 666 rights-of-way after storm events that produce 2.8 inches or more of rain within a 24-hour period (see Section 2.5).
4. Walk the base of the Highway 191 embankment where it crosses Montezuma Creek every 3 months. Look for erosion and unauthorized excavations (see Section 2.5).
5. Conduct radiological surveys at each site of a major or minor, planned or unplanned excavation and at areas where soil has visibly eroded from the rights-of-way (see Sections 2.5 and 3.0).
6. When conducting radiological surveys, check for suspect hazardous substances (see Section 5.0).
7. Handle and transport radiologically contaminated materials to the TSF in accordance with Section 4.0 of this manual and Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2001b), Sections 6.0 and 7.0.
8. Record notes and observations in the Highways 191 and 666 Record Book (see *Long-Term Surveillance and Maintenance Administrative Manual* [DOE 2001a], Section 9.0).

LTSM Checklist for MSB00176BVL

The Monticello LTSM Representative shall:

1. Inspect the publicly accessible perimeters of the property once a month for evidence of material eroding from the property and for the construction of unauthorized habitable structures on the property (see Section 2.5).
2. Inspect the publicly accessible perimeters of the property after storm events that produce 2.8 inches or more of rain within a 24-hour period. With the property owner's consent, inspect the property to determine if soil material has eroded off the property (see Section 2.5).
3. If soil movement or erosion is observed in areas adjacent to the property or on the publicly accessible perimeters, conduct a radiological survey of the soil (see Sections 2.5 and 3.0).
4. If the property owner wishes to build a habitable structure on the property, conduct a radiological survey of the excavated footprint and spoils pile (see Sections 2.5 and 3.0).
5. When conducting radiological surveys, check for suspect hazardous substances (see Section 5.0).
6. Handle and transport radiologically contaminated materials to the TSF in accordance with Section 4.0 of this manual and Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite*, (DOE 2001b) Sections 6.0 and 7.0.
7. Record notes and observations in the MSB00176BVL Record Book (see *Long-Term Surveillance and Maintenance Administrative Manual* [DOE 2001a], Section 9.0).
8. On an annual basis in May, determine if property ownership or habitation has changed and if so, inform the new owner and/or inhabitant of the land use restrictions associated with the property. Check with the city building department to see if a building permit has been issued or if re-zoning has been attempted.

LTSM Checklist for Government-Owned Piñon/Juniper Properties

The Monticello LTSM Representative shall:

1. On a quarterly basis (every 3 months), drive and walk across properties MPB00391BVL, Phase III; MPB01077BVL, Phase II; and MPB01041BVL to ensure that:
 - Habitable structures are not being built.
 - Overnight camping is not occurring.
 - Soil is not being removed from the properties (look for excavations).
 - The fence surrounding the supplemental standards contamination area is in good condition (see Section 2.5).
2. Record notes and observations in the Government-Owned Piñon/Juniper (P/J) Properties Record Book (see *Long-Term Surveillance and Maintenance Administrative Manual* [DOE 2001a], Section 9.0).

LTSM Checklist for [OU II] Montezuma Creek Soil and Sediment Properties

The Monticello LTSM Representative shall:

1. In the spring and fall of every year, walk the Operable Unit (OU) II restrictive easement area to ensure that habitable structures have not been built and soil material has not been excavated and removed from the area (see Section 2.5).
2. Walk the OU II restrictive easement area after storm events that produce 2.8 inches or more of rain within a 24-hour period (see Section 2.5).
3. If evidence of construction of a habitable structure or removal of materials to locations outside the restrictive easement area is discovered, follow the contingency actions in Section 2.5.5.
4. Record notes and observations in the OU II Soils and Sediments Record Book (see *Long-Term Surveillance and Maintenance Administrative Manual* [DOE 2001a], Section 9.0).
5. On an annual basis, determine if property ownership or habitation has changed and if so, inform the new owner and/or inhabitant of the land use restrictions associated with the property.

1.0 Manual Overview

This manual shall be used in conjunction with the Long-Term Surveillance and Maintenance (LTSM) Plans that have been prepared for the Monticello, Utah, supplemental standards properties. These plans were included in the supplemental standards applications and are provided in the following appendices:

- City of Monticello Streets and Utilities Long-Term Surveillance and Maintenance Plan (Appendix A)
- Highways 191 and 666 Rights-of-Way Within the City Limits of Monticello Long-Term Surveillance and Maintenance Plan (Appendix B)
- Piñon/Juniper Properties Long-Term Surveillance and Maintenance Plan (Appendix C)
- Restrictive Easement Area Along Montezuma Creek Long-Term Surveillance and Maintenance Plan (Appendix D)

This manual provides the details of the procedures that will be used during LTSM activities. It will be updated on an as-needed basis and will be reviewed at least once every 2 years to ensure that DOE is conducting LTSM at an appropriate level of effort.

1.1 Information in this Manual

This manual is divided into sections listed below that describe the specific operating procedures for conducting LTSM activities.

The Executive Summary of this manual contains a “checklist” for each of the supplemental standards properties listing the LTSM activities that will be conducted by the Monticello LTSM Representative. As well as summarizing the LTSM activities that will occur at each property, these checklists direct the reader to the individual sections in the manual that describe the activity in more detail; hence, the checklists provide a “road map” for readers of this manual.

Section 1.0, “Manual Overview,” is an annotated outline that can be used as a guide for using the manual.

Section 2.0, “Routine Surveillance,” identifies which items must be monitored on a scheduled basis and after significant storm events. Instructions for what to look for are also provided in this section.

Section 3.0, “Radiological Surveys,” provides instructions for the radiological control technician (RCT) to follow when conducting radiological surveys. This section also provides property-specific procedures to ensure that radiological survey requirements unique to specific properties are conducted.

Section 4.0, “Radiologically Contaminated Materials,” provides instructions for handling radiologically contaminated materials. Personal protective equipment (PPE) requirements and personnel frisking are discussed in this section.

Section 5.0, “Suspect Hazardous Substances,” provides instructions for identifying substances other than radiologically contaminated material that may pose a threat to human health or the environment. Procedures for managing such material are also included in this section.

Appendices A, B, C, and D are the LTSM plans for the City of Monticello Streets and Utilities, Highways 191 and 666 Rights-of-Way, Piñon/Juniper (P/J) Properties, and the Restrictive Easement Area along Montezuma Creek. These plans were part of the application for supplemental standards that were submitted to and approved by EPA and Utah Department of Environmental Quality (UDEQ). In addition to the LTSM plans, each appendix contains the LTSM checklist applicable to the property.

Each section contains eight major subsections: Purpose, Scope, Definitions, Responsibilities, Procedure, Training, Records, and References. The content of each subsection is described as follows:

PurposeC Defines the work to be done and how that work will be accomplished.

ScopeC Defines the applicability and limits of the procedure.

DefinitionsC Defines unfamiliar words or phrases that are used in the procedure.

ResponsibilitiesC Defines the individuals and/or organizations that perform the procedure.

ProcedureC Identifies the sequential preparations, operations, documentation, or verifications required to complete the procedure.

TrainingC Identifies the training required for personnel who are implementing the procedure.

RecordsC Identifies the records that are generated from the procedure.

ReferencesC Identifies the references, including regulations or standards, that were used to write the procedure.

Throughout the manual, various words are used to describe actions. The following words have the following meanings:

- “Shall” indicates a requirement, as do the synonyms “will” and “must.”
- “Should” indicates a recommendation.
- “May” indicates permission and is neither a requirement nor a recommendation.

1.2 References

Applicable references specific to each section are included in each section. In addition, a master reference list is provided in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2001a).

2.0 Routine Surveillance

2.1 Purpose

This section describes the procedures that will be used by the Monticello LTSM Representative to conduct routine surveillance of the supplemental standards properties. The purpose of routine surveillance is to ensure that (1) institutional controls remain effective, (2) restrictions on land use are enforced, and (3) a “presence” is created at the supplemental standards properties to encourage adherence to DOE’s LTSM requirements.

2.2 Scope

The procedures within this section are applicable to routine surveillance activities and do not describe procedures associated with annual inspections (see Definitions subsection). Annual inspection procedures are described in the *Monticello Long-Term Surveillance and Maintenance Operating Procedures for Annual Inspections and CERCLA Five-Year Reviews* (DOE 2001b).

2.3 Definitions

Habitable Structure—A structure intended for human habitation.

Inspection—Review and observation by a formally constituted team for the purpose of oversight, mobilized either at regular intervals or in response to specific concerns.

Major Excavation—Excavations that require the use of heavy motorized equipment to excavate into soil material beneath or adjacent to the city street, utility, or Highways 191 or 666 rights-of-way. For example, replacing or repairing a buried utility line, installing a culvert, replacing road base beneath a paved surface, or replacing fill material comprising an embankment would constitute a major excavation.

Minor Excavation—Excavations that can be made with hand tools or hand-operated mechanical tools (i.e., post-hole augers).

Planned Excavation—Excavations that are part of the annual budget and planning process for the city of Monticello and Utah Department of Transportation (UDOT); excavations that are included in the city’s Street Improvement Master Plan or in UDOT’s Statewide Transportation Improvement Plan or Spot Improvement Plan.

Surveillance—The act of monitoring or observing to determine whether an item or activity conforms to specified requirements; routine observations that do not require the involvement of formal inspection teams.

Unplanned Excavation—Excavations that are not planned but are necessitated by an emergency situation (e.g., a utility line break) or occur as a result of a natural event (e.g., a flood, storm, or subsidence event).

2.4 Responsibilities

Contractor LTSM Project Manager—Will be responsible for ensuring routine surveillance is conducted in accordance with the LTSM Plans and these procedures.

Monticello LTSM Representative—Will be responsible for conducting routine surveillance.

2.5 Routine Surveillance Procedures

Routine surveillance procedures are provided below to ensure that the selected remedy for supplemental standards properties remains protective of human health and the environment.

2.5.1 City Streets and Utilities

The Monticello LTSM Representative shall take the following actions:

- On a once-a-week basis, drive by and inspect the city rights-of-way to determine if erosional events or unauthorized excavations have occurred. Look for features such as: fresh soil on the street or in piles on the sides of the street, new potholes in the street surface, and gullies across or on the sides of the street. Plate 1 shows the location of the city rights-of-way that shall be investigated each week.
- After storm events, check the rain gauges at the Temporary Storage Facility (TSF) and at the U.S. Department of Transportation (DOT) Port of Entry on Highway 666.

If 2.8 inches or more of rain falls at either location within a 24-hour period (equivalent to a 25-year storm event),

then:

- Drive by and inspect the city rights-of-way to determine if soil material has been eroded.
- Look for features such as fresh soil on the street and gullies across or on the sides of the street.
- ***If*** soil movement, erosion, or excavation is observed,
then:
 - Conduct a radiological survey of the transported soil or excavated area in accordance with the procedures described in Section 3.0, “Radiological Surveys,” of this manual.
 - Record the results of the radiological survey in the City Streets and Utilities Record Book.
 - Follow the contingency actions described in [Figure 2–1](#). Contingency actions are described in detail in the *City of Monticello Streets and Utilities LTSM Plan* (Appendix A).
 - ***If*** the surveyed material is determined to be radiologically contaminated (as discussed in Section 3.0),
then:
 - a. Photograph the feature and record it in the City Streets and Utilities Record Book.

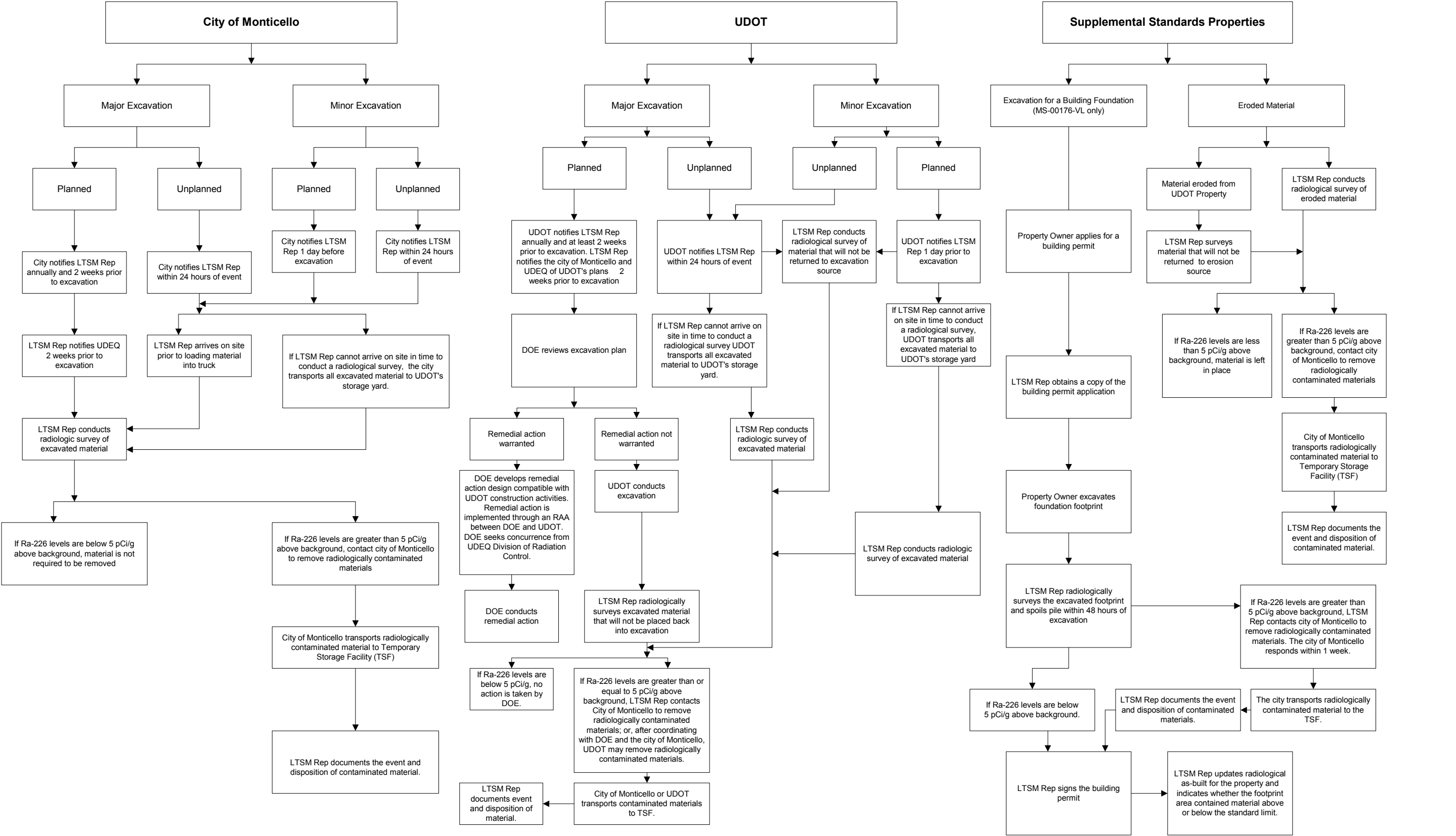


Figure 2-1. Contingency Actions

- b. Hand-draw the feature on the scaled drawing of the property. Appropriately scaled drawings of all properties are maintained in the DOE field office. Note in the record book the drawing number that was updated.
 - c. Contact the City of Monticello to transport radiologically contaminated material to the TSF.
- On a weekly basis, identify planned excavations within the city streets and utilities (see Plate 1). All scheduled excavations are reported in the Blue Stakes program. Access this program by calling the Monticello City Manager at 587-2271 and requesting the excavations planned for the week.
- Visit each site of a major or minor, planned or unplanned excavation and conduct a radiological survey in accordance with the procedures described in Section 3.0. Follow the contingency actions described in Figure 2–1. Contingency actions are described in detail in the *City of Monticello Streets and Utilities LTSM Plan* (Appendix A).
- Note observations in the City Streets and Utilities Record Book in accordance with the procedures described in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2001a), Section 9.0. Include the following information in the record book:
 - Date of surveillance or survey.
 - Inches of precipitation (if a storm event triggered inspection).
 - Location and description of areas inspected or surveyed.
 - Observations concerning erosional features or excavations (type of feature, location, size, photograph number, photograph description).
 - Results of radiological survey.
 - Final volume and disposition of excavated or eroded material.

2.5.2 Highways 191 and 666 Rights-of-Way

The Monticello LTSM Representative shall take the following actions:

- On a weekly basis, drive by and inspect the Highways 191 and 666 rights-of-way to determine if erosional events or unauthorized excavations have occurred. Look for features such as: fresh soil on the highway or in piles on the sides of the highway; new potholes in the highway surface, and gullies on the sides of the highway. Plate 2 shows the locations of the highway rights-of-way that shall be investigated each week.
- After storm events, check the rain gauge at the TSF and at the DOT Port of Entry on Highway 666.

If 2.8 inches or more of rain falls at either location within a 24-hour period (equivalent to a 25-year storm event),

then:

- Drive by and inspect the highway rights-of-way to determine if soil material has been eroded.
- Look for features such as fresh soil on the highway and gullies adjacent to the highway.
- Walk the toe of the slope of the Highway 191 embankment.

- On a quarterly basis (every 3 months), walk the west and east sides of the Highway 191 embankment (toe of slope) to determine if erosional events or unauthorized excavations have occurred.

If soil movement, erosion, or excavation is observed,
then:

- Conduct a radiological survey of the transported soil or excavated area in accordance with the procedures described in Section 3.0, “Radiological Surveys,” of this manual.
 - Record the results of the radiological survey in the Highways 191 and 666 Record Book.
 - Follow the contingency actions described in Figure 2–1. Contingency actions are described in detail in the *Highways 191 and 666 Rights-of-Way Within the City Limits of Monticello LTSM Plan* (Appendix B).
 - **If** the surveyed material is determined to be radiologically contaminated (as discussed in Section 3.0),
then:
 - a. Photograph the feature and record it in the Highways 191 and 666 Record Book.
 - b. Locate the feature on the scaled drawing of the property. Appropriately scaled drawings of all properties are maintained in the DOE field office. Note in the record book the drawing number that was updated.
 - c. Contact the City of Monticello to transport the radiologically contaminated material to the TSF.
- On a weekly basis, identify planned excavations within Highways 191 and 666 rights-of-way (see Plate 2). All scheduled excavations are reported in the Blue Stakes program. Access this program by calling the Monticello City Manager at 587-2271 and requesting the schedule for excavations planned for the week.
 - Visit each excavation site (major or minor planned or unplanned) and conduct a radiological survey in accordance with the procedures described in Section 3.0. Follow the contingency actions described in Figure 2–1. The contingency actions are described in detail in the *Highways 191 and 666 Rights-of-Way Within the City Limits of Monticello LTSM Plan* (Appendix B).
 - Note observations in the Highways 191 and 666 Record Book in accordance with the procedures described in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2001a), Section 9.0. Include the following information in the record book:
 - Date of surveillance or survey.
 - Inches of precipitation (if a storm event triggered inspection).
 - Location and description of areas inspected or surveyed.
 - Observations concerning erosional features or excavations (type of feature, location, size, photograph number, photograph description).
 - Results of radiological survey.
 - Final quantity and disposition of excavated or eroded material.

2.5.3 Privately Owned PiZon/Juniper Property

The Monticello LTSM Representative shall take the following actions:

- On a monthly basis, drive by and inspect the publicly accessible perimeters of property MS-00176-VL to determine if unauthorized habitable structures have been constructed or if soil has eroded from the property, or onto Woodland Way.
 - Look for major excavations on the property and fresh soil deposits on the roads adjacent to the property.
 - Plate 3 shows the property boundaries for MS-00176-VL.
- After storm events, check the rain gauge at the TSF and at the DOT Port of Entry on Highway 666.

If 2.8 inches or more of rain falls at either location within a 24-hour period (equivalent to a 25-year storm event),

then:

- Drive by and inspect the publicly accessible perimeters of the property to determine if soil material has been eroded off site, or onto Woodland Way.
 - With the consent of the property owner, inspect the supplemental standard property and the adjacent property to determine if soil material has eroded off the supplemental standard property (**Note:** the land owner's permission to allow access to the property is voluntary).
- **If** soil movement or erosion is observed onto areas adjacent to the property or on the publicly accessible perimeters of the property,

then:

 - Conduct a radiological survey of the transported soil in accordance with the procedures described in Section 3.0, "Radiological Surveys," of this manual.
 - Record the results of the radiological survey in the MS-00176-VL Record Book.
 - Follow the contingency actions described in Figure 2-1 for supplemental standards properties. (Contingency plans are described in detail in the *PiZon/Juniper Properties LTSM Plan* [Appendix C]).
 - **If** the surveyed material is determined to be radiologically contaminated (as discussed in Section 3.0),

then:

 - a. Photograph the feature and record it in the MS-00176-VL Record Book.
 - b. Hand-draw the feature on the scaled drawing of the property. Appropriately scaled drawings of all properties are maintained in the DOE field office. Note in the record book the drawing number that was updated.
 - c. Contact the City of Monticello to transport radiologically contaminated material to the TSF.
 - **If** the MS-00176-VL property owner wishes to build a habitable structure on the property,
 - Follow the contingency actions described in Figure 2-1. The contingency actions are described in detail in the *Piñon/Juniper Properties LTSM Plan* (Appendix C).

- Visit the excavated footprint for the structure and spoils and conduct a radiological survey in accordance with the procedures described in Section 3.0.
- Note observations in the MS-00176-VL Record Book in accordance with the procedures described in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2001a), Section 9.0. Include the following information in the record book:
 - Date of surveillance or survey.
 - Inches of precipitation (if a storm event triggered inspection).
 - Location and description of areas inspected or surveyed.
 - Observations concerning erosional features or excavations (type of feature, location, size, photograph number, photograph description).
 - Results of radiological survey.
 - Final quantity and disposition of excavated or eroded material.
- On an annual basis, determine if property ownership or habitation has changed and if so, inform the new owner and/or occupant of the land use restrictions associated with the property.
- On an annual basis, check with the city to see if re-zoning has been applied for or if building permits have been issued, and if so, determine if such actions are in conflict with the LTSM Plans.

2.5.4 Government-Owned PiZon/Juniper Properties

Properties MP-00391-VL, Phase III; MP-01077-VL, Phase II; and MP-01041-VL are referred to as Government-Owned P/J Properties to maintain consistency with Appendix C. These properties are now owned by the City of Monticello.

The Monticello LTSM Representative shall take the following actions:

- On a quarterly basis (every 3 months), drive and walk across properties MP-00391-VL, Phase III; MP-01077-VL, Phase II; and MP-01041-VL to ensure that:
 - Habitable structures are not being built.
 - Overnight camping is not occurring.
 - Soil is not being removed from the properties (look for excavations).
 - The fence surrounding the properties is in good condition.

Plate 4 shows the property boundaries of the three government-owned properties.

- After storm events, check the rain gauge at the TSF and at the DOT Port of Entry on Highway 666.

If 2.8 inches or more of rain falls at either location within a 24-hour period (equivalent to a 25-year storm event),

then:

- Drive by and inspect the publicly accessible perimeters of the property to determine if soil material has been eroded off site.
- Inspect the supplemental standards properties and the adjacent properties to determine if soil material has eroded off the supplemental standards property(ies).

- **If** soil movement or erosion is observed onto areas adjacent to the property or on the publicly accessible perimeters of the property,

then:

- Conduct a radiological survey of the transported soil in accordance with the procedures described in Section 3.0, “Radiological Surveys,” of this manual.
- Record the results of the radiological survey in the appropriate Government-Owned P/J Properties Record Book.
- Follow the contingency actions described in Figure 2–1 for supplemental standards properties. The contingency actions are described in detail in the *PiZon/Juniper Properties LTSM Plan* (Appendix C).
- **If** the surveyed material is determined to be radiologically contaminated (as discussed in Section 3.0),

then:

- a. Photograph the feature and record it in the appropriate record book.
- b. Hand-draw the feature on the scaled drawing of the property. Appropriately scaled drawings of all properties are maintained in the DOE field office. Note in the record book the drawing number that was updated.
- c. Contact the City of Monticello to transport radiologically contaminated material to the TSF.

- Note observations in the Government-Owned P/J Properties Record Book in accordance with the procedures described in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2001a), Section 9.0. Include the following information in the record book:

- Date of surveillance.
- Inches of precipitation (if a storm event triggered inspection).
- Location and description of areas inspected.
- Observations concerning unauthorized excavations (type of feature, location, size, photograph number, photograph description).
- Unauthorized overnight camping.
- Sign and fence condition.

2.5.5 Montezuma Creek Soil and Sediment Properties [OU II]

The Montezuma Creek Soil and Sediment Properties are MP-00951-VL, MP-00990-CS, MP-01084-VL, MG-01026-VL, MG-01027-VL, MG-01029-VL, MG-01030-VL, and MG-01033-VL. These properties are shown on Plate 5 and Plate 6.

The Monticello LTSM Representative shall take the following actions:

- In the spring and fall of every year, walk the Montezuma Creek restrictive easement area (see Plates 5 and 6 for the boundaries of this area) to ensure that habitable structures have not been built, soil material has not been excavated and removed from the area, and wells have not been installed. Note any significant natural or man-made disturbances to the land.
- After storm events, check the rain gauge at the TSF and at the DOT Port of Entry on Highway 666.

If 2.8 inches or more of rain falls at either location within a 24-hour period (equivalent to a 25-year storm event),

then:

- Walk the Montezuma Creek restrictive easement area and make note of any noticeable changes in the stream channel.
- Note if new erosional features have formed.
- Photograph any new, significant feature and record its location on the scaled drawing of the property. Scaled drawings of all properties are maintained in the DOE field office. Note in the record book the drawing number that was updated.
- Note observations in the OU II Montezuma Creek Soil and Sediment Properties Record Book in accordance with the procedures described in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2001a), Section 9.0. Include the following information in the record book:
 - Date of surveillance.
 - Inches of precipitation (if a storm event triggered inspection).
 - Location and description of areas inspected.
 - Observations concerning the presence of unauthorized habitable structures or areas where soil may have been removed (type of feature, location, size, photograph number, photograph description).
 - Observations concerning changes in the stream channel or the presence of new erosional features.
- *If* evidence of construction of a habitable structure, drilling of wells in the shallow alluvial aquifer, or removal of materials to locations outside the restrictive easement area is discovered,

then:

 - Contact the individual(s) who is violating the restrictive easement in person or by phone and request that the activity be discontinued.
 - Prepare a follow-up letter stating that the individual had been contacted in person or by phone and had been requested to discontinue activity(ies) in violation of the restrictive easements.
 - Send this letter to the individual by registered mail and place a copy of the letter in the project file. Send copies of the letter to the Contractor LTSM Project Manager.

- ***If*** the activity involves removal of material from the premises,
then:
 - a. attempt to locate the material.
- ***If*** the material can be located,
then:
 - a. Conduct a radiological survey in accordance with the procedures in Section 3.0 of this manual to determine if it is contaminated.
 - b. Record the results of the survey in the OU II Montezuma Creek Soil and Sediment Properties Record Book and contact the Contractor LTSM Project Manager.
- ***If*** the material is contaminated,
then:
 - a. The DOE–GJO LTSM Project Manager, in consultation with EPA and UDEQ, will make a decision regarding its final disposition.
 - b. Conduct a follow-up inspection within a reasonable period of time to determine if the activity has ceased.
- ***If*** the activity has been discontinued,
then:
 - a. Note this fact in the OU II Montezuma Creek Soil and Sediment Properties Record Book.
- ***If*** the activity has not been discontinued,
then:
 - a. Note this fact in the record book and contact the Contractor LTSM Project Manager. The Contractor LTSM Project Manager will serve legal notice through the Office of Chief Counsel (in Idaho).
- On an annual basis, determine if property ownership or habitation has changed and if so, inform the new owner and/or occupant of the land use restrictions associated with the property.

2.6 Training

To conduct the procedures outlined within this section, the Monticello LTSM Representative shall complete:

- RCT certified.
- LTSM operating procedures.

2.7 Records

The following records will be generated by this procedure:

- Bound LTSM Record Books for each property.
- Photographs of special features taken by the Monticello LTSM Representative during routine surveillance.
- Correspondence concerning supplemental standards properties.
- Telephone conference records concerning supplemental standards properties.
- Training records
- Records of any material removed from the property.

All records will be maintained in accordance with Section 9.0, “Records Management,” of the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2001a). The LTSM Working File Index identifies the location of these records.

All records will be placed in the Monticello Information Repository.

2.8 References

U.S. Department of Energy, 1999. *Monticello Mill Tailings Site, Application for Supplemental Standards, Government-Owned Properties in Monticello, Utah, DOE ID Nos. MP-00391-VL, MP-01041-VL, and MP-01077-VL*, GJO-98-66-TAR, Appendix E, “Long-Term Surveillance and Maintenance Plan,” prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1999. *Monticello Mill Tailings Site, Operable Unit III, Application for Supplemental Standards for Upper, Middle, and Lower Montezuma Creek, Volume I*, GJO-98-58-TAR, Appendix C, “Long-Term Surveillance and Maintenance Plan for Operable Unit III Soil and Sediment Area,” prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1999. *Monticello Vicinity Properties, Application for Supplemental Standards for City of Monticello Streets and Utilities*, GJO-98-68-TAR, Appendix E, “City of Monticello Streets and Utilities Long-Term Surveillance and Maintenance Plan,” prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1999. *Monticello Vicinity Properties, Application for Supplemental Standards for DOE ID No. MS-00176-VL*, GJO-96-4-TAR, Appendix E, “Long-Term Surveillance and Maintenance Plan,” prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

U.S. Department of Energy, 1999. *Monticello Vicinity Properties, Application for Supplemental Standards, Highways 191 and 666 Rights-of-Way Within the City Limits of Monticello*, GJO-96-8-TAR, Appendix E, "Highways 191 and 666 Rights-of-Way Long-Term Surveillance and Maintenance Plan," prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1999. *Cooperative Agreement with the City of Monticello*. August.

———, 1999. *Memorandum of Understanding with the Utah Department of Transportation*. August.

———, 2001a. *Monticello Long-Term Surveillance and Maintenance Administrative Manual*, MAC-LMNT 1.1.1, prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, December.

———, 2001b. *Monticello Long-Term Surveillance and Maintenance Operating Procedures for Annual Inspections and CERCLA Five-Year Reviews*, Volume IV, MAC-LMNT 1.1.1-4, prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, December.

End of current text

3.0 Radiological Surveys

3.1 Purpose

This section describes the method for identifying radiologically contaminated material and determining the Radium-226 (Ra-226) concentration of that material.

3.2 Scope

This section applies to all radiological surveys on Monticello supplemental standards properties and at DOE's TSF.

3.3 Definitions

Radiological Survey To delineate and document the surface area and radionuclide activity in counts per second (cps) or microrentgen per hour ($\mu\text{R/hr}$). The vertical extent and radionuclide concentrations in picocuries per gram (pCi/g) may also be determined.

Gamma Scintillometer An Eberline Model E-600 ratemeter with an external, crutch-mounted detector consisting of a 1.5-inch-thick by 1.5-inch-diameter sodium iodide crystal. This instrument reads in cps that may be converted to $\mu\text{R/hr}$.

Delta Scintillometer The ELB00018B delta-gamma scintillometer. The instrument measures soil Ra-226 concentrations in units of counts per second which may be converted to pCi/g.

EPA Standard The EPA "Radium in Soil Standard" found in 40 CFR 192 states that the Ra-226 concentration in soil shall not exceed 5 pCi/g above background in the first 15 centimeters (cm) of soil, averaged over 100 square meters (m^2), and shall not exceed 15 pCi/g above background in any subsequent 15-cm layer averaged over 100 m^2 . As a conservative approach, only the 5 pCi/g surface standard will be applied during LTSM activities. Normal background in the Monticello area is 1.0 pCi/g, making the standard 6.0 pCi/g.

3.4 Responsibilities

Monticello LTSM Representative Will be responsible for:

- Performing radiological surveys in accordance with this procedure,
- Maintaining his/her instruments in calibration and in good working condition,
- Collecting accurate, adequate, and appropriate data, and properly recording such data,
- Notifying the Contractor LTSM Project Manager in the event that conditions outside the normal scope of this procedure are found (these conditions may include finding radiologically contaminated material in excess of 130 pCi/g and/or suspected hazardous material, or encountering safety hazards in the course of performing duties).

Contractor LTSM Project ManagerC Will be responsible for overseeing the data collected to ensure it meets programmatic goals discussed in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2001a).

3.5 Procedure

The Monticello LTSM Representative shall take the following actions to conduct a radiological survey:

3.5.1 Instrument Response Checks

The results of a daily instrument response check for each instrument must be within 20 percent of the After-Calibration Source Response before the instrument may be used. Follow the procedure below to determine whether the instrument is still in calibration.

After-Calibration Source Response

Ensure each calibrated instrument has a completed After-Calibration Source Response Check Data Sheet (Figure 3–1). If necessary, set up the After-Calibration Source Response Check Data Sheet as follows:

- Select the correct source for the type of instrument. Guidelines for source selection are provided in *Portable Radiation Survey Instrument Response Checks*, Procedure HS 310.01 of the *Grand Junction Office Health, Safety, and Radiation Protection Desk Instructions Manual* (MACTEC–ERS and *WASTREN-GJ GJ0 2A*).
- Record the following information at the top of the After-Calibration Source Response Check Data Sheet (Figure 3B1).
 - Location (site) (e.g., Monticello, 200 South 3rd St.),
 - Date,
 - Instrument manufacturer, model number, and government property number,
 - Probe manufacturer, model number, and government property number,
 - Instrument and probe calibration due date, and
 - Radioactive check source identification number and isotope.
- Select the appropriate scale and choose a source-to-detector distance and geometry and any shielding necessary to obtain an instrument response at or near the middle of the scale.
- Record this information and the instrument response on the After-Calibration Source Response Check Data Sheet.
- Expose the instrument to a source of radiation.
- *If* the instrument functions only as a rate meter,
then allow the meter to stabilize for approximately 30 seconds.

After-Calibration Source Response Check Data Sheet

Location _____

Detector/Probe Data (if applicable)

Month _____ Day _____ Year _____

Manufacturer _____

Model No. _____

Government Property No. _____

Calibration Due Date _____

Survey Instrument Data

Manufacturer _____

Model No. _____

Government Property No. _____

Calibration Due Date _____

Check Source Data

Isotope _____

Source I.D. No. _____

Instrument Scale	Source Detector Distance	Shielding/Geometry	Instrument Response	-20%	+20%	Scale Units

Comments:

*Performed by (print)*_____
*Performed by (signature)*_____
*Date*_____
*Reviewed by (print)*_____
*Reviewed by (signature)*_____
Date

File Index No. _____

Figure 3–1. After-Calibration Source Response Check Data Sheet

- **If** the instrument is equipped with integrating or scaler functions, **then** allow the meter to count the source for one minute.
- Record the indicated value in the instrument response column of the After-Calibration Source Response Check Data Sheet.
- Calculate the values 20 percent above and below the instrument response, and record these values in the appropriate locations on the After-Calibration Source Response Check Data Sheet.
- Repeat all the steps in this subsection for each type of radiation detection instrument and for each scale. For instruments that automatically adjust the scale (i.e., microprocessor based instruments) repeat all of the steps in this subsection at two activities in the range of expected radioactivity to be measured.

Gamma Scintillometer Daily Response Check

- Check the instrument tag to ensure the instrument is calibrated. Scintillometers are calibrated every 12 months or after major repair using the *Electronics Laboratory Technical Manual*, Technical Procedure ELPB08.
- Perform a battery check by selecting Check Mode. The battery voltage must be at least 25 percent; if not, turn the E-600 off and replace the batteries.
- **Note:** If the battery icon appears while using the scintillometer in any operational mode, stop and replace the batteries and start over.
- Set the response setting to “MED” (medium). This is a 4-second response time.
- Insert the detector of the crutch scintillometer into the hole in the operational check fixture.
- Turn the mode select switch to Ratemeter and toggle the Gross/Net button to Gross.
- Compare the reading to the response check range specified on the After-Calibration Source Response Check Data Sheet (Figure 3–1). Record the data in the applicable column of the Daily Instrument Response Check Data Sheet (Figure 3–2).
- If a reading is out of range, check the instrument settings to make sure all settings were correct. If they were not correct, change the settings, and repeat the operational check. If instrument settings were correct, tag the instrument as defective, and return the instrument for repair.

Daily Instrument Response Check Data Sheet

Source ID No. _____ Isotope _____ Scale Units _____ Page __ of __
 Detector Model _____ Property No. _____ Probe Model _____ Property No. _____
 Month _____ Year _____ Month _____ Year _____

Initial below and on the Instrument Response Check Sticker if daily response check is satisfactory						
Response (Scale or Decade)						Initials
Day						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

Initial below and on the Instrument Response Check Sticker if daily response check is satisfactory						
Response (Scale or Decade)						Initials
Day						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

Reviewed by (print and sign)

Date

Reviewed by (print and sign)

Date

File Index No. _____

Figure 3–2. Daily Instrument Response Check Data Sheet

Delta Scintillometer Daily Response Check

- Check the instrument tag to ensure the instrument is calibrated. Deltas are calibrated every 12 months or after major repair using the *Electronics Laboratory Technical Manual*, Technical Procedure ELPB35R, Section 4.0.
- Turn power switch to ON.
- Replace the batteries if an arrow and colons appear in the display.
- Place the delta on the top surface of the operational check fixture.
- Using the rotary switch, select the desired counting interval (normally 120 seconds).
- Remove the tungsten filter from the slot on the undersurface of the instrument.
- Depress the START button to initiate the UP or total count.
- Verify that the displayed count is increasing; if the displayed count is decreasing, depress the RESET button then the START button.
- When the total-count interval is complete, record the total count on the Daily Instrument Response Check Data Sheet (Figure 3B2).
- Compare the total-count operational check reading to the operational check range specified on the After-Calibration Source Response Check Data Sheet (Figure 3B1). If the total count is within the range specified, record the data in the appropriate column of the Daily Instrument Response Check Data Sheet. The instrument may now be used for Ra-226 measurements.
- If the total count is not within the specified range, ensure that all instrument settings are correct. If any instrument settings are found to be incorrect, correct them and repeat the response check.
- If the instrument settings are correct, tag the instrument with a “Defective” tag. Record the operator’s name, instrument serial number, and date on the tag. Submit the instrument for repair.

3.5.2 Background Determination

- Set the gamma scintillometer function switch set to “FAST” position (1-second response time), the mode select switch set to Ratemeter, and the Gross/Net button toggled to Gross. Rescale the analog meter by pressing the Range Up or Range Down buttons. The digital display will provide accurate information up to twice the range of the meter scale.
- Measure background locations by switching to the Scaler Mode and press the Star Key to initiate a 10-second count. The average value is displayed at the end of 10 seconds.

- Take three to five scintillometer readings in areas away from the suspected contamination. Typical background for the Monticello area is 90 to 120 cps.
- Record these readings on a 20- or 50-scale map (for city streets and utilities and for Highway 191 and 666 rights-of-way) or a 200-scale map (for MSB00176BVL). A hand-drawn map may also be drawn and labeled in the LTSM record book for the site. [Figure 3B3](#) shows an example of the recorded readings.
- Average these readings to determine the background value.

3.5.3 Gamma Scan

- Set the gamma scintillometer function switch set to “FAST” position (1-second response time), the mode select switch set to Ratemeter, and the Gross/Net button toggled to Gross. Rescale the analog meter by pressing the Range Up or Range Down buttons. The digital display will provide accurate information up to twice the range of the meter scale.
- Measure anomalies by switching to the Scaler Mode and press the Star Key to initiate a 10-second count. The average value is displayed at the end of 10 seconds.
- Walk slowly over the area of the survey swinging the detector in a 4- to 6-foot wide traverse approximately 3 inches off the ground.
- Note any areas that exceed 1.3 times the background value. Typical background values for the Monticello area are 90 to 120 cps; areas that are 1.3 times background will normally be 120 to 160 cps. (A reading of 160 to 200 cps typically equates to 5 pCi/g Ra-226; however, this correlation is highly variable.) All areas that exceed 1.3 times the average background will be investigated with the delta scintillometer to determine the Ra-226 concentration.
- As the traverse is performed, note the boundaries of the elevated areas and mark them with spray paint, if needed.
- Ensure the entire area of interest is scanned.
- Record these readings on the appropriate-scale map (see Section 3.5.2) in the LTSM record book (include date and map page) for the site. [Figure 3B3](#) shows an example of the recorded readings.

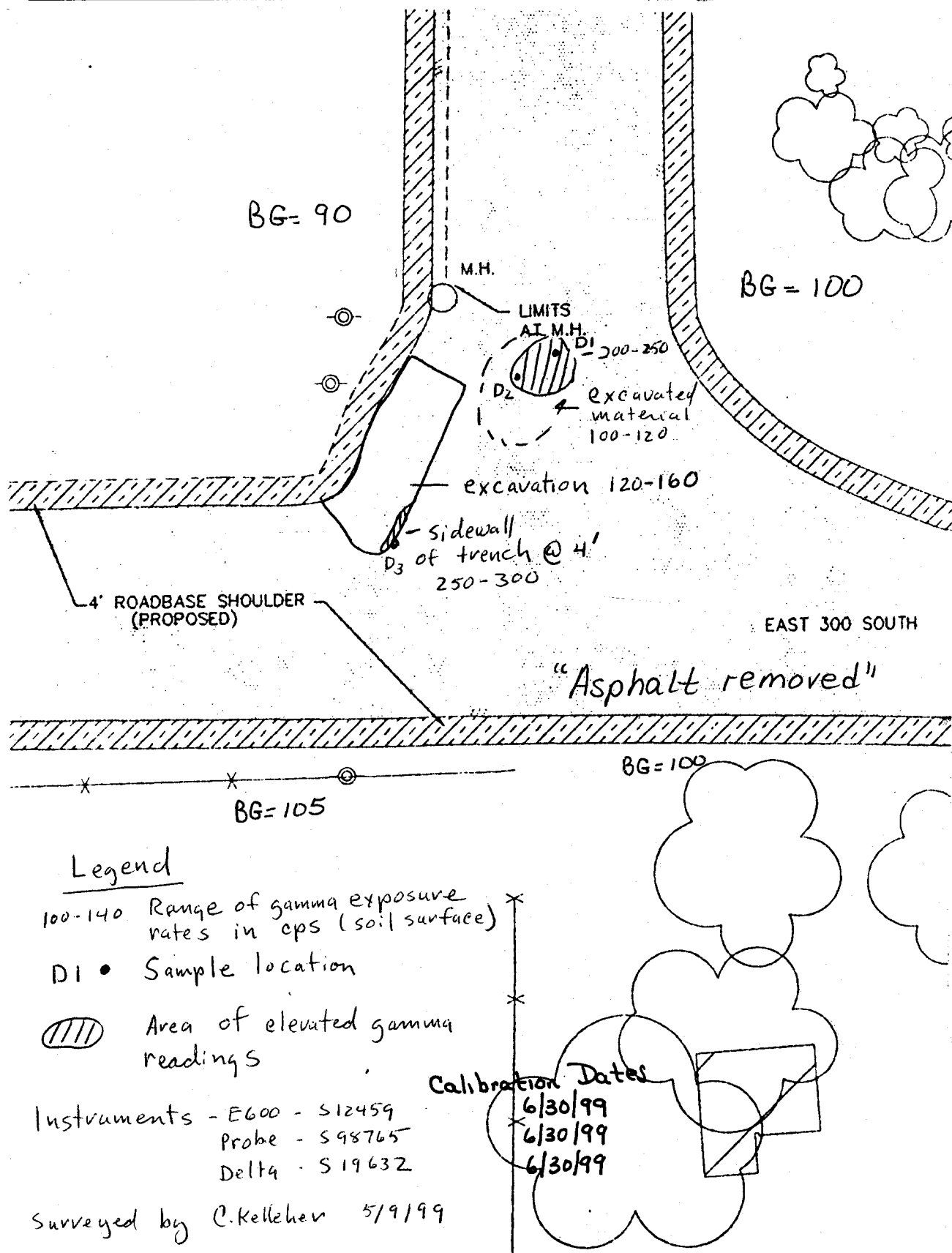


Figure 3-3. Example of Recorded Readings—Before and During Excavations

3.5.4 Delta Measurements

- Following the gamma scan, investigate all areas that exceed 1.3 times the average background with the delta scintillometer to determine the Ra-226 concentration of the soil.
- Make a delta measurement at the highest gamma location within each discrete area.
- If needed, make additional measurements to establish the area boundary.

Note: The EPA standard for Monticello is 6.0 pCi/g. However, for conservatism, an action level of 5.0 pCi/g will be used for delta measurements.

- Turn power switch to ON and set the time switch to the desired interval (normally 120 seconds). Remove the filter.
- Place the instrument on the surface to be measured. If possible, the instrument should not be moved during the sequence of unfiltered and filtered measurements.
- Turn power switch to ON. Press the START button to initiate the total count. Verify that the count is increasing; if it is not, depress the RESET button and then the START button.
- At the end of the counting interval, record the total count on the Delta Scintillometer Field Data form (see [Figure 3B4](#)).
- Place the filter in the receptacle beneath the detector without moving the detector.
- Depress the START button and verify that the count is decreasing.
- At the end of the counting interval, record the difference (delta count) on the Delta Scintillometer Field Data form.
- Calculate the uncertainty using the following equation:

$$\% \text{ Uncertainty} = 100 \times \frac{\sqrt{2TC - \text{Delta}}}{\text{Delta}}$$

Where TC is the total count, and Delta is the delta count.

***ALL COUNT TIMES ARE 120 SECONDS UNLESS NOTED OTHERWISE**

$Ra-226 \text{ slope} * \left(\frac{\Delta \text{ Count}}{120 \text{ seconds}} \right) - \text{intercept}$	$\% \text{ Uncer} = \frac{\sqrt{(2 * \text{Total Count}) - \Delta}}{\Delta} * 100$
---	--

Verified: S. Supervisor Date: 5/14/99

H:\A-FORMS\DELTA.FLD (11/96)

Figure 3–4. Delta Scintillometer Field Data Form

Calculate the Ra-226 of the measurement using the following equation:

$$\text{Ra - 226} = \text{slope} \times (\text{delta count} / \text{count time}) - \text{intercept}$$

The slope and intercept values are found on the card attached to the instrument.

- Mark with orange spray paint all material 5.0 pCi/g or greater. These materials are considered radiologically contaminated.

3.5.5 Property-Specific Procedures

City Streets and Utilities

- At open-area excavations (e.g., road surface excavations):
 - Survey the surface of the exposed area after asphalt has been removed using the procedures in Sections 3.5.3 and 3.5.4.
 - Survey the surface of each additional lift to be removed.
 - Segregate any material that equals or exceeds 5.0 pCi/g or greater into a separate pile. Use minimization techniques, such as surveying each loader bucket of material, and segregate radiological material from material that is less than 5.0 pCi/g.
 - Record the survey data on the site map and summarize the survey results in the City Streets and Utilities Record Book.
 - For mapping purposes only, survey the sidewall faces and bottom of the open-areas excavation. (**Note:** Radiologically contaminated material in sidewall faces and bottom of the open-area excavation will not be removed if it is outside the limits of the intended excavation). Record the following information on the site map:
 - a. Gamma range for the excavated area (highest, lowest, and average reading observed).
 - b. Delta measurement at the highest gamma location within the excavated area (inside the trench).
 - c. Depth of the excavated area.
 - d. Identification numbers and calibration dates of the instruments used during the verification survey.
 - e. Date of the survey.
 - f. [Figure 3B5](#) shows an example of the recorded data.

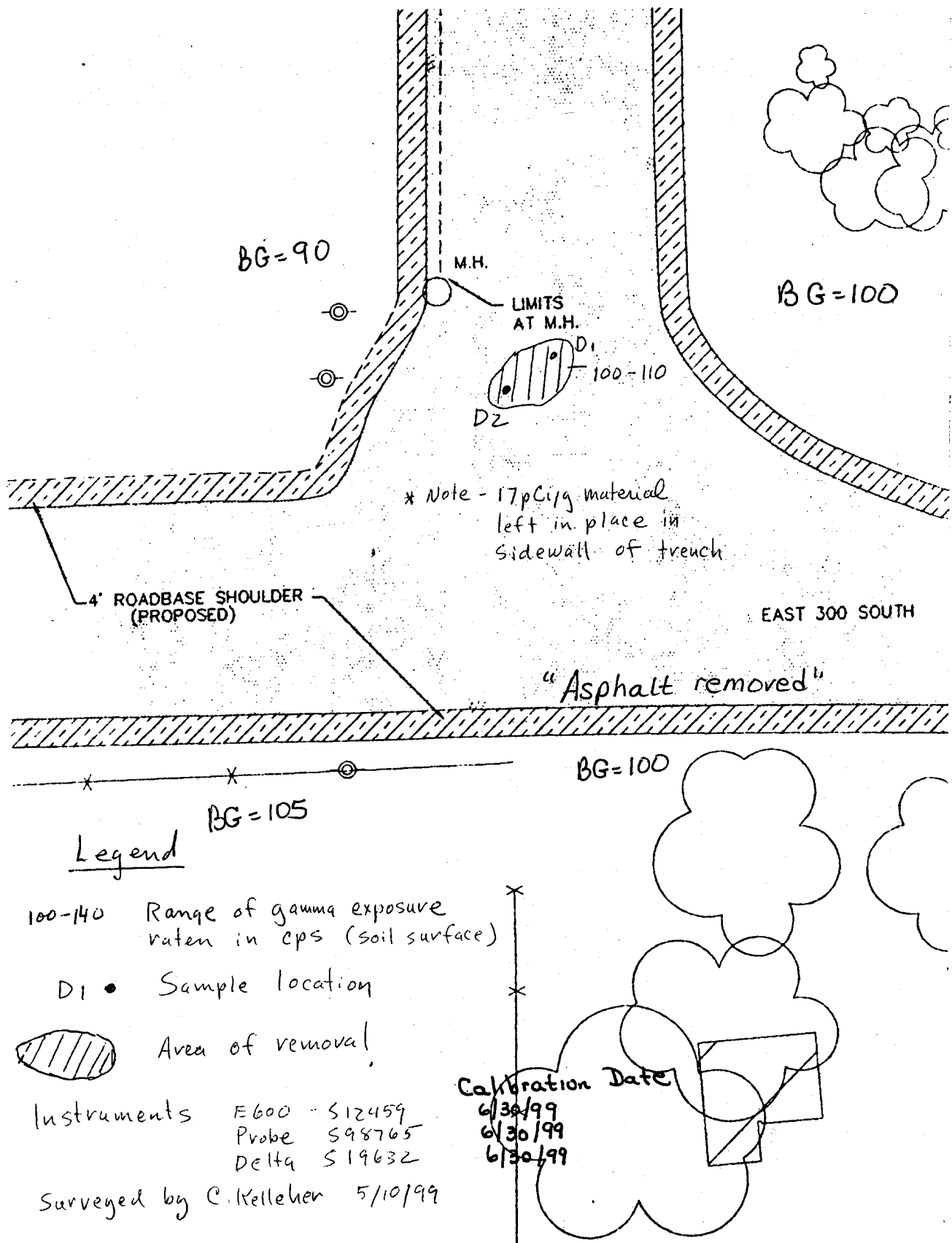


Figure 3-5. Example of Recorded Data—After Excavation

- ***If*** radiologically contaminated materials are found, ***then*** instruct city of Monticello workers to transport the material to the TSF in accordance with the *City Streets and Utilities LTSM Plan* (Appendix A) and with Section 4.0 of this manual and Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2001b), Sections 6.0 and 7.0.
- At trench excavations (e.g., utility line excavations):
 - Survey the stockpile of excavated material using the procedures in Sections 3.5.3 and 3.5.4.
 - For mapping purposes only, survey the sidewall faces and bottom of the trench. (Note: Radiologically contaminated material in sidewall faces and bottom of the trench will not be removed if it is outside the limits of the intended excavation). Record the following information on the site map:
 - a. Gamma range for the excavated area (highest, lowest, and average reading observed).
 - b. Delta measurement at the highest gamma location within the excavated area.
 - c. Depth of the excavated area.
 - d. Identification numbers, and calibration dates of the instruments used during the verification survey.
 - e. Date of the survey.
 - f. Figure 3B5 shows an example of the recorded data.
 - ***If*** radiologically contaminated materials are found, ***then*** instruct city of Monticello workers to transport the material to the TSF in accordance with the *City Streets and Utilities LTSM Plan* (see Appendix A) and with Sections 4.0 and 5.0 of this manual and Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2001b), Sections 6.0 and 7.0.
- In areas where soil material has visibly been moved as a result of an erosional event:
 - Survey the material using the procedures in Sections 3.5.3 and 3.5.4.
 - Record the survey data on the site map and summarize the survey results in the City Streets and Utilities Record Book.
 - ***If*** radiologically contaminated materials are found, ***then*** instruct city of Monticello workers to transport the material to the TSF in accordance with the *City Streets and Utilities LTSM Plan*, (see Appendix A) and with Section 4.0 of this manual and Volume I, *Long-Term Surveillance and Maintenance*

Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite
(DOE 2001b), Sections 6.0 and 7.0.

Highways 191 and 666 Rights-of-Way

- At all excavation sitesC major, minor, planned, and unplanned (see Section 3.0 of this manual for definitions):
 - Survey only the material that will *not* be returned to the excavation using the procedures in Sections 3.5.3 and 3.5.4.
 - Record the survey data on the site map and summarize the survey results in the Highways 191 and 666 Record Book.
 - ***If*** radiologically contaminated materials are found,
then instruct UDOT or city of Monticello workers to transport the material to the TSF in accordance with the *Highways 191 and 666 LTSM Plan* (see Appendix B) and with Sections 4.0 and 5.0 of this manual and Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2001b), Sections 6.0 and 7.0.

Privately Owned Piñon/Juniper Property (MSB00176BVL)

- At an excavated footprint of a habitable structure:
 - Survey the surface of the exposed excavation using the procedures in Sections 3.5.3 and 3.5.4.
 - ***If*** radiologically contaminated materials are found,
then contact the city of Monticello and instruct the city workers to remove the radiologically contaminated materials in accordance with Sections 4.0 and 5.0 of this manual and Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2001b), Sections 6.0 and 7.0.
 - Continue to survey the surface of each additional lift and instruct city workers to remove radiologically contaminated material until all radiologically contaminated material is removed from the footprint. (**Note:** Radiologically contaminated materials will be chased in a vertical direction only; they will not be chased laterally outside the footprint).
 - Record the survey data on the site map and summarize the survey results in the MSB00176BVL Record Book.

- At the spoils pile from the excavated footprint or at an area of material that has eroded off the MSB00176BVL property:
 - Survey the stockpile of excavated material or the area that has eroded off the property using the procedures in Sections 3.5.3 and 3.5.4.
 - *If* radiologically contaminated materials are found, *then* instruct city of Monticello workers to transport the material to the TSF in accordance with Section 4.0 of this manual and Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2001b), Sections 6.0 and 7.0.
 - Record the survey data on the site map and summarize the survey results in the MSB00176BVL Record Book.
- Update the Radiological As-Built for the property on file with the San Juan County Recorder.
 - Identify location of footprint on the Radiological As-Built.
 - Indicate whether the footprint area contained materials above or below the cleanup standard.
 - Record volumes and disposition of the footprint and spoils pile materials on the Radiological As-Built.

3.5.6 Areas With Anomalous Backgrounds

- Some areas of Monticello have background Ra-226 concentrations in excess of 1.0 pCi/g due to naturally occurring radionuclides in the bedrock.
- Removal of naturally occurring material is not required.
- If such an area is encountered, document the area and the conditions through collection of radiological data and through photographs of the site.

3.5.7 Documentation

Document all measurements in accordance with the procedures in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2001a), Section 9.0.

3.6 Training

- LTSM Operating Procedures.
- Delta and Gamma Scintillometer Training.
- Naturally Occurring Radioactive Materials identification training (from geologist).

3.7 Records

The following records may be generated by the use of this procedure.

- Training records
- Entries in the LTSM record books
- Radiological survey maps
- Delta Scintillometer Field Data forms
- Response check data sheets

All records will be maintained in accordance with the latest revision of the LTSM Working File Index.

All records will be placed in the Monticello Information Repository.

3.8 References

MACTEC–ERS, (latest revision). *Grand Junction Office Field Services Procedures Manual*, MAC-3000:

- Section 2.0 Indoor/Outdoor Radiological Surveys
- Section 3.0 Excavation Control and Verification Procedures
- Section 5.0 Portable Gamma Scintillometer Measurements
- Section 6.0 Delta Scintillometer Measurements for In-Situ Radium Analysis

U.S. Department of Energy, 1999. *Monticello Mill Tailings Site, Application for Supplemental Standards, Government-Owned Properties in Monticello, Utah, DOE ID Nos. MPB00391B/L, MPB01041B/L, and MPB01077B/L*, GJOB98B66BTAR, Appendix E, “Long-Term Surveillance and Maintenance Plan,” prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

CCC, 1999. *Monticello Mill Tailings Site, Operable Unit II, Application for Supplemental Standards for Upper, Middle, and Lower Montezuma Creek, Volume I*, GJOB98B58BTAR, Appendix C, “Long-Term Surveillance and Maintenance Plan for Operable Unit III Soil and Sediment Area,” prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

CCC, 1999. *Monticello Vicinity Properties, Application for Supplemental Standards for City of Monticello Streets and Utilities*, GJOB98B68BTAR, Appendix E, “City of Monticello Streets and Utilities Long-Term Surveillance and Maintenance Plan,” prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1999. *Monticello Vicinity Properties, Application for Supplemental Standards for DOE ID No. MSB00176B/L*, GJOB96B4BTAR, Appendix E, “Long-Term Surveillance and Maintenance Plan,” prepared by U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

U.S. Department of Energy, 1999. *Monticello Vicinity Properties, Application for Supplemental Standards, Highways 191 and 666 Rights-of-Way Within the City Limits of Monticello*, GJOB96B8BTAR, Appendix E, “Highways 191 and 666 Rights-of-Way Long-Term Surveillance and Maintenance Plan,” prepared by U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 2001a. *Monticello Long-Term Surveillance and Maintenance Administrative Manual*, MAC-LMNT 1.1.1, prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, December.

———, 2001b. *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite*, Volume I, MAC-LMNT-1.1.1-1, prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, December.

End of current text

4.0 Radiologically Contaminated Materials

4.1 Purpose/Scope

This section describes the guidance for the safe handling of radiologically contaminated material on the Monticello supplemental standards properties.

4.2 Definitions

Easily Removed Material—Radiologically contaminated material with a Ra-226 concentration greater than or equal to 130 pCi/g that can be removed with a shovel or similar hand-operated tool and having a volume less than or equal to 1 cubic yard.

Difficult to Remove Material—Radiologically contaminated material with a Ra-226 concentration greater than or equal to 130 pCi/g that cannot be easily removed using hand tools and having a volume greater than 1 cubic yard.

Radiologically Contaminated Material—The residual radioactive material resulting from DOE-related uranium and vanadium ore processing that contains Ra-226 concentrations exceeding background by more than 5 pCi/g in the surficial 15 cm of soil averaged over 100 m².

Radiological Control Manager—The person, located at the GJO, who leads and is responsible for the Radiological Protection Program; he/she must be qualified in accordance with the applicable *Radiation Protection Program Plan*.

4.3 Responsibilities

Contractor LTSM Project Manager—Will be responsible for overall implementation of these procedures.

Radiological Control Manager—Will be responsible for reviewing records associated with the handling of radiologically contaminated materials having Ra-226 concentrations greater than or equal to 130 pCi/g.

Monticello LTSM Representative—Will be responsible for ensuring that radiologically contaminated materials are handled in accordance with this procedure.

4.4 Procedure for Handling Radiologically Contaminated Materials

The Monticello LTSM Representative shall take the following actions:

- Perform radiological surveys to determine the activity of the excavated or eroded material in accordance with the LTSM Plans and Section 3.0, “Radiological Surveys,” of this manual.

- **If** the material is determined to **not** be radiologically contaminated material, **then** no further action is required.
- **If** the material is determined to be radiologically contaminated and has Ra-226 concentrations less than 130 pCi/g, **then** refer to Section 4.4.1 of this procedure.
- **If** the material is determined to be radiologically contaminated and has Ra-226 concentrations greater than or equal to 130 pCi/g Ra-226, **and** is determined to be “Easily Removed Material” (see definition), **then** refer to Section 4.4.2 of this procedure.
- **If** the material is determined to be radiologically contaminated and has Ra-226 concentrations greater than or equal to 130 pCi/g Ra-226, **and** is determined to be “Difficult to Remove Material” (see definition), **then** refer to Section 4.4.3 of this procedure.

4.4.1 Radiologically Contaminated Materials with Less Than 130 pCi/g Ra-226 Concentration

The Monticello LTSM Representative shall take the following actions:

- Instruct the appropriate personnel to load the material into approved haul trucks.
- Ensure that the material is hauled to and off-loaded at the TSF in accordance with the *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2001b), Sections 6.0 and 7.0.
- Follow good housekeeping practices to ensure that visible contamination is removed from equipment.

4.4.2 Radiologically Contaminated Material with Greater Than Or Equal To 130 pCi/g Ra-226 Concentration; Easily Removed Material

The Monticello LTSM Representative shall take the following actions:

- Obtain the following materials:
 - shovel or similar hand tool
 - a steel drum with sealable lid
 - plastic bag
 - duct tape
 - disposable rubber overshoes and gloves
 - Radiological Access and Frisking Log sheet ([Figure 4-1](#)).
- Place the plastic bag in the steel drum.

RWP No. _____

Check as appropriate:

Personal monitoring (frisk) not required for radiation area, high radiation area, or very high radiation area.
Send a copy of this log to the Dosimetry Group (if airborne area) for DAC-HR determination.

All persons entering the work area must log IN and OUT. Persons required to perform a personal survey (frisk) must do so prior to leaving the work area. Note background meter reading before survey. Survey results greater than background readings, or an instrument alarm, requires that Radiological Control personnel be notified immediately. Radiological Control personnel are responsible for directing decontamination efforts and resurvey, if required.

Your signature on this log signifies that you have read, understand, and will comply with the Radiological Work Permit (RWP) associated with your entry.

[illegible]

File Index No. _____

Figure 4–1. Radiological Access and Frisking Log

[illegible]

Figure 4-1 (continued). Radiological Access and Frisking Log

- Don rubber overshoes and gloves (PPE).
- Sign in on the Radiological Access and Frisking Log sheet.
- Place the contaminated material in the plastic bag.
- Remove PPE and place it in the plastic bag.
- Seal the bag with duct tape and mark the bag with “Caution, Radioactive Material.”
- Close the steel drum.
- Perform a whole-body contamination survey:
 - Verify that the frisking instrument is in service, set to the proper scale, and the audio output can be heard during frisking.
 - Frisk the hands before picking up the probe.
 - Perform the frisk in the following order:
 - a. Head (pause at mouth and nose for approximately 5 seconds)
 - b. Neck and shoulders
 - c. Arms (pause at each elbow)
 - d. Chest and abdomen
 - e. Back, hips, and seat of pants
 - f. Legs (pause at each knee)
 - g. Shoe tops
 - h. Shoe bottoms (pause at sole and heel)
 - Hold probe less than ½ inch from surface being surveyed for beta and gamma contamination, approximately ¼ inch for alpha contamination.
 - Move probe slowly over surface, approximately 2 inches per second.
 - If the count rate increases during frisking, pause for 5 to 10 seconds over the area to provide adequate time for instrument response.
 - The whole body frisk should take at least 2 to 3 minutes.
 - ***If*** a whole body frisk for personnel contamination indicates possible skin or clothing contamination in excess of 5,000 disintegrations per minute (dpm)/100 square centimeters (cm²),
then follow the procedure “Personnel Skin and Clothing Decontamination,” HS-330.04, in the *Grand Junction Office Health, Safety, and Radiation Protection Desk Instructions Manual* (MACTEC-ERS and WASTREN-GJ GJO 2A).
- Sign out on the Radiological Access and Frisking Log Sheet.

- Perform a radiological contamination survey of all potentially contaminated equipment and materials in accordance with “Surface Contamination Surveys and Equipment and Material Release,” HS-330.01, in the *Grand Junction Office Health, Safety, and Radiation Protection Desk Instructions Manual* (MACTEC-ERS and WASTREN-GJ GJO 2A).
- If the radiological contamination survey results indicate contamination levels greater than the release limits in HS-330.01, then decontaminate the equipment or material in accordance with instructions provided by the Radiological Control Manager.

Transport the material to the TSF in accordance with Section 6.0 of Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2001b).

4.4.3 Radiologically Contaminated Materials with Greater Than Or Equal To 130 pCi/g Ra-226 Concentration; Difficult to Remove Material

When contaminated materials with greater than or equal to 130 pCi/g Ra-226 concentration are difficult to remove (i.e., cannot be easily removed with a shovel or hand-operated tool and having a volume greater than 1 cubic yard), the Monticello LTSM Representative shall contact the city of Monticello for assistance in removing the material. The Monticello LTSM Representative shall take the following actions:

- Post the area containing the contamination as a “Contamination Area” in accordance with the *Grand Junction Office Site Radiological Control Manual* (MACTEC-ERS and WASTREN-GJ GJO 3).
- Contact the city of Monticello and obtain assistance.
- Ensure that city of Monticello workers are qualified (i.e., properly trained) to remove radiologically contaminated materials having greater than or equal to 130 pCi/g Ra-226 concentrations (see Section 4.5, Training).
- Ensure that workers don the proper PPE.
- Ensure that each worker signs in on the Radiological Access and Frisking Log sheet.
- Oversee the removal of the contaminated material and its placement in the haul truck.
- When work within the Contamination Area is completed, ensure that workers remove their PPE and place it in a plastic bag.
- Seal the bag with duct tape and mark the bag with “Caution, Radioactive Material.”

- Perform whole-body contamination surveys on each worker:
 - Verify that the frisking instrument is in service, set to the proper scale, and the audio output can be heard during frisking.
 - Perform the frisk in the following order:
 - a. Hands
 - b. Head (pause at mouth and nose for approximately 5 seconds)
 - c. Neck and shoulders
 - d. Arms (pause at each elbow)
 - e. Chest and abdomen
 - f. Back, hips, and seat of pants
 - g. Legs (pause at each knee)
 - h. Shoe tops
 - i. Shoe bottoms (pause at sole and heel)
 - Hold probe less than $\frac{1}{2}$ inch from surface being surveyed for beta and gamma contamination, approximately $\frac{1}{4}$ inch for alpha contamination.
 - Move probe slowly over surface, approximately 2 inches per second.
 - If the count rate increases during frisking, pause for 5 to 10 seconds over the area to provide adequate time for instrument response.
 - The whole body frisk should take at least 2 to 3 minutes.
 - **If** a whole body frisk for personnel contamination indicates possible skin or clothing contamination in excess of 5,000 dpm/100 cm²,
then follow the procedure “Personnel Skin and Clothing Decontamination,” HS-330.04, in GJO 2A.
- Ensure that each worker signs out on the Radiological Access and Frisking Log sheet.
- Perform a radiological contamination survey of all potentially contaminated equipment and materials in accordance with “Surface Contamination Surveys and Equipment and Material Release,” HS-330.01, in GJO 2A.
- If the radiological contamination survey results indicate contamination levels greater than the release limits in HS-330.01, then decontaminate the equipment or material in accordance with instructions provided by the Radiological Control Manager.
- Ensure that the material is transported to the TSF in accordance with Section 6.5 of Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2001b).

City workers are responsible for following the Monticello LTSM Representative’s instructions.

4.4.4 Documentation and Review

The Monticello LTSM Representative shall:

- Record the disposition of radiologically contaminated materials in the property-specific LTSM record book.
- Submit documentation associated with radiologically contaminated materials having Ra-226 concentrations greater than or equal to 130 pCi/g to the Radiological Control Manager for supervisory review and sign-off.
- Record the applicable File Index Number on each record generated by this procedure.

4.5 Training

The Monticello LTSM Representative shall be currently qualified as an RCT. RCT requirements are identified in the *Grand Junction Office Training Manual* (MACTEC-ERS and *WASTREN-GJ* GJO 4).

City of Monticello and UDOT workers handling radiologically contaminated materials having Ra-226 concentrations less than 130 pCi/g shall complete the following training:

- LTSM Training
- General Employee Radiological Training (GERT)

City of Monticello workers handling radiologically contaminated materials having Ra-226 concentrations greater than or equal to 130 pCi/g shall complete the following training:

- LTSM Training
- Radiological Worker II Training and annual refreshers.

4.6 Records

The following records may be generated by this procedure:

- Notes in LTSM record books
- Radiological Access and Frisking Log (GJO 1551e)
- Personnel Skin and Clothing Contamination Report (GJO 1785e)
- Incident/Safety Report (GJO 1743e)
- Radiological Survey Map (GJO 1553)
- Training records

All records will be maintained in accordance with the latest revision of the LTSM Working File Index.

All records will be placed in the Monticello Information Repository.

4.7 References

10 CFR Part 835. "Occupational Radiation Protection," Subpart H Records, *Code of Federal Regulations*, January 2000.

MACTEC-ERS, (continually updated). *Radiation Protection Program Plan*, MAC-1006, Revision 2, Grand Junction, Colorado.

MACTEC-ERS and WASTREN-GJ, (continually updated). *Grand Junction Office Health, Safety, and Radiation Protection Desk Instructions Manual*, GJO 2A, Grand Junction, Colorado.

———, (continually updated). *Grand Junction Office Site Radiological Control Manual* GJO 3, Grand Junction, Colorado.

———, (continually updated). *Grand Junction Office Training Manual*, GJO 4, Grand Junction, Colorado.

U.S. Department of Energy, 1999. *Monticello Mill Tailings Site, Application for Supplemental Standards, Government-Owned Properties in Monticello, Utah, DOE ID Nos. MP-00391-VL, MP-01041-VL, and MP-01077-VL*, GJO-98-66-TAR, Appendix E, "Long-Term Surveillance and Maintenance Plan," prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1999. *Monticello Mill Tailings Site, Operable Unit II, Application for Supplemental Standards for Upper, Middle, and Lower Montezuma Creek, Volume I*, GJO-98-58-TAR, Appendix C, "Long-Term Surveillance and Maintenance Plan for Operable Unit III Soil and Sediment Area," prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1999. *Monticello Vicinity Properties, Application for Supplemental Standards for City of Monticello Streets and Utilities*, GJO-98-68-TAR, Appendix E, "City of Monticello Streets and Utilities Long-Term Surveillance and Maintenance Plan," prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1999. *Monticello Vicinity Properties, Application for Supplemental Standards for DOE ID No. MS-00176-VL*, GJO-96-4-TAR, Appendix E, "Long-Term Surveillance and Maintenance Plan," prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1999. *Monticello Vicinity Properties, Application for Supplemental Standards, Highways 191 and 666 Rights-of-Way Within the City Limits of Monticello*, GJO-96-8-TAR, Appendix E, "Highways 191 and 666 Rights-of-Way Long-Term Surveillance and Maintenance Plan," prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

U.S. Department of Energy, 2001a. *Monticello Long-Term Surveillance and Maintenance Administrative Manual*, MAC-LMNT 1.1.1, prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, December.

———, 2001b. *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite*, Volume I, MAC-LMNT-1.1.1-1, prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, December.

5.0 Suspect Hazardous Substances

5.1 Purpose

The purpose of this section is to describe the procedures that will be used by the Monticello LTSM Representative to identify and manage radiologically contaminated suspect hazardous substances that have been released to the environment.

5.2 Scope

The procedures within this section are applicable to radioactively contaminated material exhibiting field recognition criteria indicative of a release of hazardous substances to the environment. The procedures are limited to radiologically contaminated material located within the following Monticello supplemental standards properties:

- City of Monticello streets and utilities
- Highways 191 and 666 rights-of-ways within the city limits of Monticello
- Private and government-owned P/J properties
- Montezuma Creek soil and sediment properties [OU II]

5.3 Definitions

Asbestos—Material that is harmful to human health or the environment and that is specifically defined and regulated under the Toxic Substances Control Act.

CERCLA Hazardous Substance—Material that is harmful to human health or the environment and that is specifically defined and regulated under CERCLA.

Field Recognition Criteria—Anomalous physical conditions that would lead an inspector to believe that material has been released that may be harmful to human health or the environment. These physical conditions may be observed via sensory perceptions (e.g., sight, odor, etc.) or with field screening equipment such as a photo ionization detector (PID).

Hazardous Substances—For purposes of this document, the term “hazardous substances” includes CERCLA hazardous substances present in concentrations greater than EPA’s risk-based clean-up concentrations, hazardous waste, polychlorinated biphenyls (PCBs), and asbestos.

Hazardous Waste—Material that is harmful to human health or the environment and that is specifically defined and regulated under the Resource Conservation and Recovery Act (RCRA).

Polychlorinated biphenyl—Material that is harmful to human health or the environment and that is specifically defined and regulated under the Toxic Substances Control Act.

Radiologically Contaminated Materials—Residual radioactive material resulting from DOE-related uranium and vanadium ore processing that contains Ra-226 concentrations exceeding background by more than 5 pCi/g in the surficial 15 cm of soil averaged over 100 m², or more than 15 pCi/g in successively deeper 15-cm layers.

Suspect Hazardous Substance—Any material that exhibits field recognition criteria that would indicate the material is potentially harmful to human health or the environment. Sampling and analysis has not been completed for suspect hazardous substances, therefore the material is “suspected” to be a hazardous substance.

5.4 Responsibilities

Monticello LTSM Representative—Will be responsible for:

- Requesting assistance from the Contractor LTSM Project Manager for sampling, characterizing, and implementing the appropriate management of any radiologically contaminated material that is also contaminated with a hazardous substance, and;

With the exception of the formerly DOE-owned properties (MP-00181, MP-00211, MP-00893, MP-00391, MP-01040, MP-01041, MS-01042, and MP-01077), DOE will ***not*** be responsible for managing nonradiologically contaminated hazardous substances encountered on supplemental standards properties unless it is attributable to DOE.

Contractor LTSM Project Manager—Will be responsible for:

- Providing appropriately qualified personnel to sample and characterize radiologically contaminated materials that are also suspect hazardous substances.
- Providing appropriately qualified personnel to remediate, transport, store, and dispose of radiologically contaminated material that is also contaminated with other hazardous substances.

Environmental Specialist—Will be responsible for sampling and disposing of suspect hazardous substances that are radiologically contaminated and for developing a management plan for the waste.

5.5 Procedures

The Monticello LTSM Representative shall take the following actions:

- During each excavation or routine surveillance conducted in accordance with the procedures described in Section 2.0 “Routine Surveillance,” of this manual, look for field recognition criteria indicative of hazardous substances. Field recognition criteria that may be indicative of a release of hazardous substances include (but are not limited to) the following:
 - Materials, including soil, that are odorous or emit organic vapors or trace gases.
 - Discoloration of soil or concrete.
 - Soil texture or consistency atypical of the soils encountered on the site (e.g., crystalline growth and sludge-like material).

- Free liquids (excluding ground and surface water).
 - Sustained readings of 5 parts per million or greater on a PID. The measurement shall be made at the air/soil interface in freshly disturbed soil.
 - Ground or surface water with a visible sheen, phase-separation, or emulsion.
 - Materials contained within unanticipated structures such as tanks, cisterns, sumps, drain lines, landfill material (trash), and surface impoundments.
 - Containers suspected to contain chemical waste or products, and chemical staining and/or soil discoloration in areas adjacent to leaking or empty containers.
 - Debris that exhibits other field recognition criteria. Exclude construction and vegetation debris (e.g., concrete slabs, structural steel, trees, root balls) unless it exhibits other field recognition criteria.
 - Lead-acid battery casings and internal battery components.
 - Electrical transformers or other fluid filled electrical equipment.
 - Workers (or other people) experiencing unusual sensations (e.g., dizziness, headaches, nausea, metallic taste in mouth, unexplainable odors).
 - Dead or unhealthy vegetation or animals whose condition is suspected of being attributable to hazardous substance contamination.
 - Oily soil or soil stained by suspected petroleum products (e.g., gasoline, diesel, transmission fluid, etc.).
 - Pipe insulation, floor tiles, roofing tiles, and fibrous material that may be indicative of asbestos contamination.
- If field recognition criteria are absent, make a notation in the LTSM record book in accordance with the procedures described in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2001), Section 9.0, indicating that an inspection for hazardous substances was conducted and that there was no indication of hazardous substance contamination. For example, “No field recognition criteria indicative of hazardous substances was observed.”
 - If field recognition criteria indicative of hazardous substances is observed, cease all work in the area and isolate the area with a barricade (e.g., construction fence, barricade rope, or warning tape). Do not excavate, containerize, transport, or stockpile material. Note all observations in the LTSM record book in accordance with the procedures described in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2001), Section 9.0. Include the following information: date of inspection, location and size of suspect hazardous substance, field recognition criteria observed, photograph number and

description (if photographs are taken). If an emergency situation exists in which the work stoppage would create a greater safety hazard to the workers or public, excavated material may be hauled to the DOT storage area, isolated, and characterized.

- Contact the Contractor LTSM Project Manager to obtain the assistance of an industrial hygienist to determine the appropriate PPE. Appropriate PPE will be selected on the basis of the field recognition criteria observed and knowledge of the potential type of contaminant. Don appropriate PPE and conduct a radiological survey as described in the procedures in Section 3.0 of this manual. Upon completion of the survey, leave the PPE in the controlled area to be managed with the suspect hazardous substance. Note all observations and radiological survey results in the LTSM record book in accordance with the procedures described in Section 4.0 of this manual and Section 9.0 in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2001).

5.5.1 Radiologically Contaminated Suspect Hazardous Substances

The Monticello LTSM Representative shall take the following actions:

- If radiologically contaminated material is present in the suspect hazardous material, cease all work in the area, isolate the area with a barricade (e.g., construction fence, barricade rope, or warning tape), and contact the Contractor LTSM Project Manager. The Contractor LTSM Project Manager will enlist the assistance of an Environmental Specialist to sample the material for appropriate analytes. Procedures for sampling, transporting, storing, and managing hazardous substances are beyond the scope of this manual. The Environmental Specialist will review the data, make a waste type determination, and develop a compliance strategy based on the type of material encountered. Because different hazardous substances present different risks and are regulated under various regulations, each suspected hazardous substance will be investigated on an individual basis by the Environmental Specialist.
- Obtain copies of analytical reports and correspondence and place in the project file.
- Follow the directions of the Environmental Specialist for management of the material. Depending on the type of hazardous substance encountered (e.g., CERCLA hazardous substance, hazardous waste, PCBs, asbestos), handling, storage, and transportation of the material, even samples, may be regulated by law.
- If the radiologically contaminated suspect hazardous substance is identified as a hazardous substance, the Environmental Specialist will oversee removal of the material and its transportation to the TSF for temporary storage. If the TSF is used for temporary storage of hazardous substances, the Environmental Specialist will implement a waste-specific management plan consistent with the regulatory requirements applicable to the type of material in storage.

5.6 Training

To conduct the procedures outlined in this section, the Monticello LTSM Representative shall complete:

- RCT training.
- LTSM Operating Procedures.
- Respirator Wearer training and annual refreshers.
- PID operational training.

To conduct sampling, make waste type determinations, develop hazardous substance management plans, and excavate hazardous substances, the Environmental Specialist shall be:

- Trained and current in hazardous waste regulations codified at 40 CFR Parts 260–299.
- Trained and current in DOT regulations codified at 49 CFR Parts 106–180.
- Trained and current in CERCLA regulations codified at 40 CFR Parts 300–399.
- Trained and current in Toxic Substances Control Act regulations codified at 40 CFR 761–763.
- Trained and current in Occupational Safety and Health Administration hazardous waste training regulations.

To select appropriate PPE, the industrial hygienist shall be:

- A certified Industrial Hygienist as prescribed by the American Conference of Industrial Hygienists.

5.7 Records

The following records will be generated by this procedure:

- The LTSM record book, which includes notations, observations of field recognition criteria, and radiological survey results.
- Analytical reports.
- Photographs of visual field recognition criteria.
- Correspondence concerning supplemental standards properties.
- Telephone conference records concerning supplemental standards properties.
- Training records.

All records will be maintained in accordance with the latest revision of the LTSM Working File Index.

All records will be placed in the Monticello Information Repository.

5.8 References

40 CFR Parts 260-299 “Resource Conservation and Recovery Act,” Subtitle C.

40 CFR Parts 300-399 Subchapter J- Superfund, Emergency Planning, and Community Right-to-Know Programs.

40 CFR Part 761, “Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.”

40 CFR Part 763, “Asbestos.”

State of Utah. “Utah Hazardous Waste Management Regulations,” Utah Administrative Code (UAC) R315-2-1.

15 U.S.C. 2601, *et seq.*, “Toxic Substances Control Act”.

42 U.S.C. 6901, *et seq.*, “Resource Conservation and Recovery Act of 1976,” as amended.

42 U.S.C. §9601, *et seq.*, *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, Chapter 103 January 5, 1999.

U.S. Department of Energy, 1999. *Monticello Mill Tailings Site, Application for Supplemental Standards, Government-Owned Properties in Monticello, Utah, DOE ID Nos. MP-00391-VL, MP-01041-VL, and MP-01077-VL*, GJO-98-66-TAR, Appendix E, “Long-Term Surveillance and Maintenance Plan,” prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1999. *Monticello Mill Tailings Site, Operable Unit III, Application for Supplemental Standards for Upper, Middle, and Lower Montezuma Creek, Volume I*, GJO-98-58-TAR, Appendix C, “Long-Term Surveillance and Maintenance Plan for Operable Unit III Soil and Sediment Area,” prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1999. *Monticello Vicinity Properties, Application for Supplemental Standards for City of Monticello Streets and Utilities*, GJO-98-68-TAR, Appendix E, “City of Monticello Streets and Utilities Long-Term Surveillance and Maintenance Plan,” prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1999. *Monticello Vicinity Properties, Application for Supplemental Standards for DOE ID No. MS-00176-VL*, GJO-96-4-TAR, Appendix E, “Long-Term Surveillance and Maintenance Plan,” prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

U.S. Department of Energy, 1999. *Monticello Vicinity Properties, Application for Supplemental Standards, Highways 191 and 666 Rights-of-Way Within the City Limits of Monticello*, GJO-96-8-TAR, Appendix E, "Highways 191 and 666 Rights-of-Way Long-Term Surveillance and Maintenance Plan," prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 2001. *Monticello Long-Term Surveillance and Maintenance Administrative Manual*, MAC-LMNT 1.1.1, prepared by MACTEC Environmental Restoration Services, LLC for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, December.

U.S. Environmental Protection Agency (EPA), Region 3, 1995. *Risk-Based Concentration Table*, First Quarter 1995.

End of current text

Appendix A

City of Monticello Streets and Utilities Long-Term Surveillance and Maintenance Plan

Note: This appendix is excerpted from Appendix E of *MVP Application for Supplemental Standards--City of Monticello Streets and Utilities*, May 1999 (Document Number E0388803). With the exception of the headers, footers, and numbering system, the wording in this appendix is identical to Appendix E of the original document. This appendix is provided to demonstrate continuity with the plans developed at the time of application for supplemental standards. Updated changes to the administration and quality assurance of the LTSM program are provided in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual*.

LTSM Checklist for City Streets and Utilities

The Monticello LTSM Representative shall:

1. Inspect the city rights-of-way once a week for evidence of erosion and unauthorized excavations (see Section 2.5).
2. Once a week, obtain the schedule of planned excavations by calling the city of Monticello and requesting the excavation schedule from the Blue Stakes program (see Section 2.5).
3. Inspect the city rights-of-way after storm events that produce 2.8 inches or more of rain within a 24-hour period (see Section 2.5).
4. Conduct radiological surveys at each site of a major or minor, planned or unplanned excavation and at areas where soil has visibly eroded from the rights-of-way (see Sections 2.5 and 3.0).
5. When conducting radiological surveys, check for suspect hazardous substances (see Section 5.0).
6. Handle and transport radiologically contaminated materials to the Temporary Storage Facility in accordance with Section 4.0 of this manual and Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2001b), Sections 6.0 and 7.0.
7. Record notes and observations in the City Streets and Utilities Record Book (see *Long-Term Surveillance and Maintenance Administrative Manual* [DOE 2001a], Section 9.0).

Contents

A.1	Administration of the LTSM Program	A-7
A.2	Restrictions on Land Use	A-8
A.3	Active Institutional Controls	A-8
A.4	Routine Surveillance	A-9
A.5	Annual Inspections and Reports	A-10
A.6	Contingency Action Plan.....	A-11
A.6.1	Major Planned Excavations.....	A-11
A.6.2	Major Unplanned Excavations	A-13
A.6.3	Minor Planned and Unplanned Excavations	AB13
A.6.4	Radiological Surveys.....	AB15
A.6.5	Radiological Site Controls.....	AB16
A.6.6	Reportable Quantity Releases	AB17
A.6.7	Training	AB17
A.6.8	Transportation of Radiologically Contaminated Materials	AB18
A.6.9	Spill Response	AB19
A.6.10	Temporary Storage Facility.....	AB20
A.7	CERCLA 5-year Reviews	AB23
A.8	Records	AB24
A.9	Health and Safety	AB25
A.10	Quality Assurance	AB26
A.11	Procedures for Revising and Updating the LTSM Plan	AB26
A.12	Reservation of Rights	AB26
	References.....	AB26

Figures

Figure AB1.	Contingency Actions Associated with Major Planned Excavations	AB12
AB2.	Contingency Actions Associated with Major Unplanned Excavations or Erosional Events	AB14
AB3.	Contingency Actions Associated with Minor Planned and Unplanned Excavations	AB16
AB4.	Temporary Storage Facility Conceptual Plan	AB21

This page intentionally blank

City of Monticello Streets and Utilities Long-Term Surveillance and Maintenance Plan

Should supplemental standards be accepted by the U.S. Environmental Protection Agency (EPA) and State of Utah Department of Environmental Quality (UDEQ) for the city of Monticello streets and utilities, radiologically contaminated material will remain in place, and a long-term surveillance and maintenance (LTSM) management strategy will be implemented. For the purposes of this document, ***radiologically contaminated material*** is defined as the residual radioactive material resulting from U.S. Department of Energy (DOE) -related uranium and vanadium ore processing that contains radium-226 (Ra-226) concentrations exceeding background by more than 5 picocuries per gram (pCi/g) in the surficial 15 centimeters of soil averaged over 100 square meters, or by more than 15 pCi/g in successively deeper 15-centimeter layers. The LTSM management strategy will include

- ~ Implementing institutional controls (i.e., placing restrictions on land use).
- ~ Conducting routine surveillances and inspections.
- ~ Implementing contingency actions if radiologically contaminated materials are encountered or disturbed in the future.
- ~ Preparing reports for regulatory agencies.
- ~ Keeping records.

Sections A.2 through A.12 define and describe these management actions.

A.1 Administration of the LTSM Program

Initially, DOE's LTSM obligations will be carried out by the project staff assigned to the ongoing remedial actions in Monticello. Within DOE Headquarters, overall responsibility and authority for Monticello activities rests with the Assistant Secretary for Environmental Management, acting through the Office of Southwestern Area Programs, Division of Off-Site Programs. Field management responsibility and authority at Monticello are delegated to the Manager of the DOE Albuquerque Operations Office, acting through the Assistant Manager for Environmental/Project Management. The authority, responsibility, and accountability for implementing and administering the Monticello projects are, in turn, delegated to the Manager of the DOE Grand Junction Office (GJO), who assigns coordination, management, and operational staff as necessary. The Office of Chief Counsel at the Albuquerque Operations Office is DOE's legal advisor. Other organizations within the Albuquerque Operations Office provide financial, procurement, and real-estate management support.

The DOEBGJO office was assigned responsibility for the LTSM Program on January 1, 1989 (DOE 1988a). Because the Monticello sites were once part of DOE's former Surplus Facilities Management Project, all long-term activities at Monticello were specifically included in the scope of the LTSM Program. Upon EPA's and UDEQ's approval of this supplemental standards application, administrative and operational responsibilities for the properties will be implemented and administered under the existing remedial action programs. Upon completion of these programs, administration of LTSM will be transferred to the LTSM Program. Transfer is expected to occur on October 1, 2001.

When administration of the LTSM activities is transferred to the LTSM Program, the DOEBGJO contact for actions associated with the supplemental standards locations will be a Monticello-based DOE representative, who may be a DOE employee or a contractor to DOE. The representative will reside in Monticello on a full-time basis and will be on call 24 hours a day, 7 days a week. When the representative leaves the Monticello area, he or she will ensure that backup personnel are available to perform the duties required of the representative. The contact address will be:

DOE Representative (LTSM Program)
U.S. Department of Energy
7031 South Highway 191
P.O. Box 909
Monticello, UT 84535
(435) 587B4011

DOE will be responsible for constructing a temporary storage facility (TSF) in Monticello to manage radiologically contaminated materials generated under the LTSM Program. Operations at this facility are discussed in Section A.6.10.

DOE will enter into a Cooperative Agreement with the city of Monticello wherein the parties will agree on the future management of city streets and utilities. As one of the terms of this agreement, DOE will provide the city of Monticello with a dump truck and front-end loader for excavating and transporting radiologically contaminated materials. With this equipment, the city will assist DOE in removing and transporting radiologically contaminated materials from city streets rights-of-way as well as from other supplemental standards locations, such as State highway rights-of-way and piñon/juniper properties. The city will be responsible for fueling and maintaining this equipment. DOE also will compensate the city for the purchase of clean backfill material for sites at which radiologically contaminated materials have been removed.

A.2 Restrictions on Land Use

- The city of Monticello will maintain the city streets and utility lines as public rights-of-way and will not allow permanent habitable structures on them. If the city should decide to excess or allow habitable structures on a right-of-way, DOE will be notified and will conduct a radiological characterization to determine the nature and extent of contamination at the property. If remedial action is warranted, a remedial action design will be developed. Remediation will be implemented through a Remedial Action Agreement (RAA) between DOE and the city that will be approved by UDEQ, Division of Radiation Control.

A.3 Active Institutional Controls

- DOE will conduct regular surveillances and inspections (see Sections A.4 and A.5) of the city rights-of-way to detect changes in land use or conditions that may affect the protectiveness of supplemental standards (such as erosion or unauthorized excavations).
- The city of Monticello will meet with the DOE representative on an annual basis to review the Cooperative Agreement and discuss upcoming projects and maintenance work. Each year, the city will provide DOE with its most current revision of the Street Improvement Master Plan, which identifies the city's planned improvements for a 20-year period. DOE

will make note of all the *major planned* and *minor planned excavations* that will occur on the rights-of-way.

- For the purposes of this document, *planned excavations* are those that are included in the city's Street Improvement Master Plan or annual budget. *Major excavations* include those that entail major intrusions into the rights-of-way, such as installation of a culvert beneath a paved surface, replacement of road base beneath a paved surface, or removal and replacement of fill material comprising an embankment. *Minor excavations* are those that can be made with hand tools or hand-operated mechanical tools (i.e., post-hole augers). The city's description of major excavations will include the location, extent, and dates of the planned disturbance.
- Because other entities, such as utility companies, must apply for and obtain an Encroachment and Excavation Permit from the city of Monticello prior to excavating in the city rights-of-way, the city will be responsible for providing DOE with a copy of the permit when it is issued. The permit includes a description of the scope of work, the location of the excavation, identification of the entity conducting the excavation, and date on which the work will be performed.
- For all contracted work occurring on the city rights-of-way, the city will keep DOE apprised of prerequisite-construction schedules, including the design, bid, and construction start of projects.
- In addition to the city's annual notification of projects to DOE, the city will notify DOE a minimum of 2 weeks before major excavations are to begin. The city will make the notification regardless of who is performing the work (e.g., contractor or utility company). Notice will be provided in writing to the DOE representative at the local Monticello address. The DOE representative will notify UDEQ of the city's major planned excavations 2 weeks before the event.
- The city will notify DOE a minimum of 1 day before minor excavations are planned. Notification will be provided in writing or by telephone to the DOE representative in Monticello.
- In the event of a major or minor unplanned excavation on a city right-of-way, the city will provide verbal notice to DOE within 24 hours of the event. *Unplanned excavations* are those that are not planned but are necessitated by an emergency situation (e.g., a utility line break) or occur as a result of a natural event (e.g., a flood, storm, or subsidence event).

A.4 Routine Surveillance

DOE will be responsible for routine surveillance of the city rights-of-way. For the purposes of this document, *surveillance* means routine observations that do not require the involvement of formal inspection teams. The DOE representative will conduct surveillances of the rights-of-way to ensure that (1) the restrictions on land use are enforced by the city, (2) active institutional controls remain effective, and (3) a "presence" is created at the properties to encourage adherence to DOE's LTSM requirements. Results of the surveillances will be documented

through logbook entries. Detailed procedures for completing surveillance documentation are described in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

Routine surveillance of the city rights-of-way will consist of

- A weekly drive-by inspection of the rights-of-way to determine if erosional events or unauthorized excavations have occurred.
- Periodic inspections of the rights-of-way after large (25-year or greater) storm events to determine if erosional events have occurred. Eroded material will be removed by the city within 1 week (maximum) after notification by the DOE representative.
- A physical visit to each site of a planned or unplanned excavation to ensure that activities conducted at the excavation meet the requirements outlined in DOE's contingency action plan (Section A.6).

Section A.6 describes the actions that will be followed if the DOE representative discovers visibly transported radiologically contaminated materials.

A.5 Annual Inspections and Reports

DOE will conduct an annual inspection of the city rights-of-way to document site conditions and land use. For the purposes of this document, *inspection* means review and observation by a formally constituted team for purposes of quality assurance and oversight, mobilized either at annual intervals or in response to specific concerns. Inspection team members will be provided by DOE's LTSM Program, will be qualified in their fields, and will be trained in the requirements of the supplemental standards program.

In general, the inspection team will begin each inspection with a review of the surveillance records created by the on-site DOE representative. Areas of concern or special problems will be noted and investigated. Transects across the rights-of-way will be walked to ensure a thorough inspection. Primarily, the inspection team will look for physical disturbances and for changes in land use. Detailed procedures for conducting annual inspections are described in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

During the first 5 years of the LTSM Program in Monticello, DOE will prepare an annual inspection report and submit it to UDEQ and EPA within 90 days after completion of the annual inspection. An exception to the 90-day time frame will be made if the inspectors find an unsafe or hazardous condition that is related to the presence of radiologically contaminated material. If this situation occurs, UDEQ and EPA will be notified immediately, and the annual report will be submitted within 60 days. After the first 5 years of the LTSM Program, DOE will continue to submit the annual inspection report to UDEQ but will submit the report to EPA only if radiologically contaminated material was removed during the year. DOE will submit annual inspection reports until UDEQ and EPA no longer require them.

Annual inspection reports will be available for public review at DOEBGJO and the DOE representative's Monticello office. These annual reports, along with supporting documentation in the permanent files, will serve to (1) document the performance history of the supplemental standards locations; (2) provide DOE, EPA, and UDEQ with the information necessary to

forecast future surveillance and maintenance needs; and (3) provide information to the public to demonstrate that site integrity is being maintained. The annual reports will contain the following information:

- Narrative of site inspection, results, conclusions, and recommendations.
- Summary of any spills that may have occurred during the previous year (see Section A.6.9).
- Relevant supporting documentation.
- Site inspection map and other drawings, maps, or figures, as required.
- Inspection photographs and a photographic log sheet if new or changed conditions warrant photographic documentation.
- Recommendations for additional follow-up inspections, repair, or custodial maintenance, if required.
- Recommendations for follow-up or contingency inspection reports, if required.

A.6 Contingency Action Plan

If radiologically contaminated materials are encountered during construction activities or are disturbed as a result of natural events, DOE and the city of Monticello will be required to take specific contingency actions. These actions and DOE's and the city's operational responsibilities are outlined in the following sections.

A.6.1 Major Planned Excavations

The city, city contractors, and utility companies may encounter radiologically contaminated materials during routine maintenance, repairs, and/or construction on the city rights-of-way. The city is responsible for notifying DOE of its major planned excavations on an annual basis and again 2 weeks before the event. The DOE representative is responsible for notifying UDEQ of the city's major planned excavations 2 weeks before the event.

The DOE representative will be on site during construction operations to radiologically survey excavations. Survey procedures for open-area and trench excavations are described in Section A.6.4. If the surface cleanup standard (5 pCi/g Ra-226 above background) is not exceeded, no action will be taken by DOE. If the surface cleanup standard is exceeded, city workers will remove and transport the radiologically contaminated materials to the TSF. Radiologically contaminated materials *outside* the limits of the intended excavation will not be removed (i.e., tailings will not be chased). Sections A.6.5 through A.6.10 describe the procedures that will be followed for removing, transporting, and disposing of contaminated materials. Figure AB1 summarizes the contingency actions that will be taken for major planned excavations.

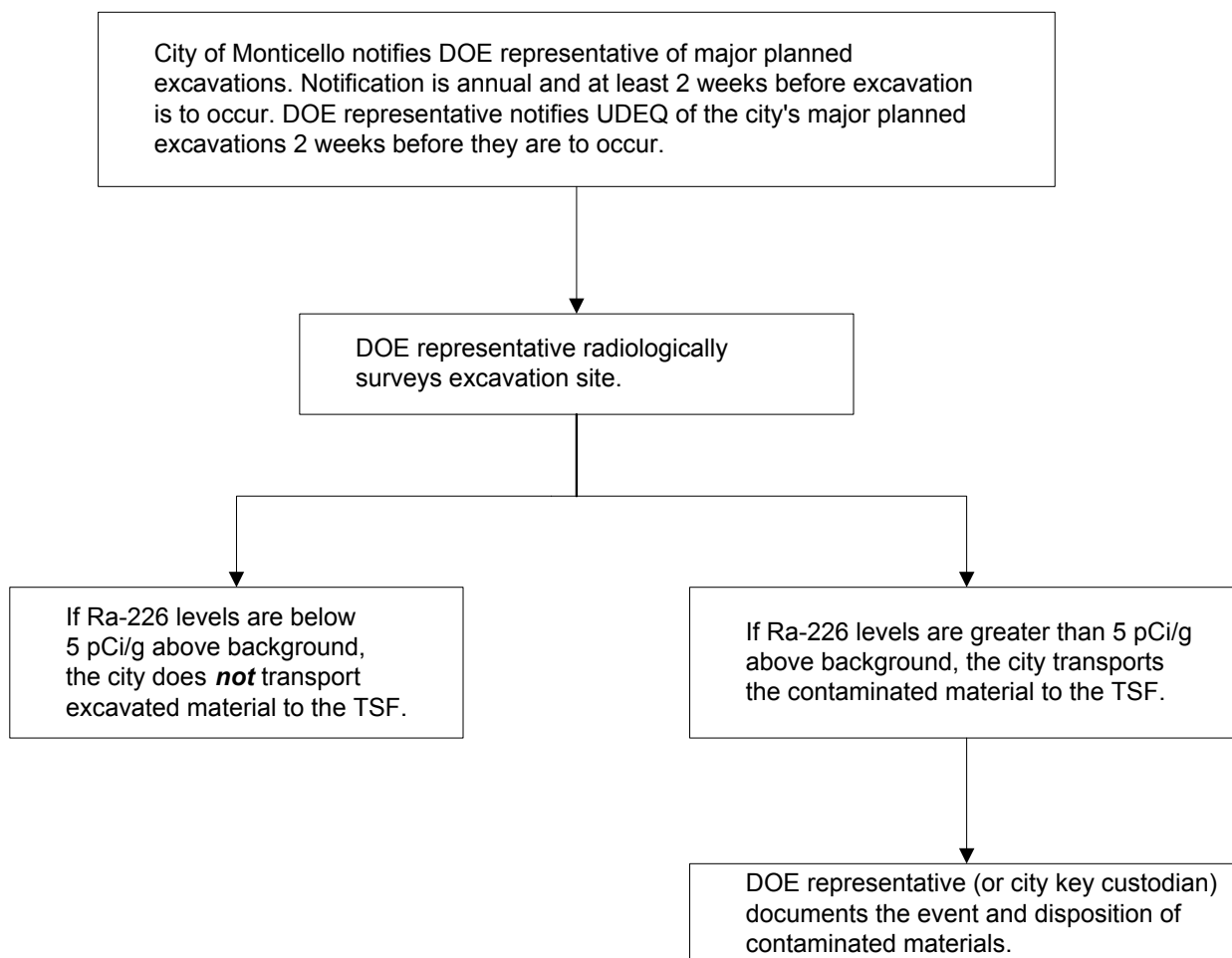


Figure AB1. Contingency Actions Associated with Major Planned Excavations

[**Note:** When the city excavates in the Highway 191 or Highway 666 rights-of-way within the city limits, a permit will be obtained from the Utah Department of Transportation (UDOT). All radiologically contaminated material removed from the excavation by city workers will be transported to the TSF. This procedure varies from UDOT's excavation procedure in highway rights-of-way; UDOT workers may elect to return radiologically contaminated materials to the excavation rather than transport them to the TSF.]

A.6.2 Major Unplanned Excavations

If a major excavation along a city right-of-way is conducted by the city, a utility company, or a city contractor as a result of an unplanned event, the city will be responsible for notifying DOE within 24 hours of the event. The DOE representative will arrive at the scene as soon as practical to radiologically survey excavated material. If an erosional event results in the movement of soil materials from a city right-of-way, the DOE representative will radiologically survey the visibly transported material. Section A.6.4 describes the instrumentation and methods DOE will use to survey the excavated or eroded material.

If the surface cleanup standard is not exceeded, the excavated or transported material will not be required to be removed. If the surface cleanup standard is exceeded, city workers will remove the radiologically contaminated material and transport it to the TSF. Sections A.6.5 through A.6.10 describe the procedures that will be followed for removing, transporting, and disposing of contaminated materials.

In the unlikely situation where excavated or transported materials must be removed from a city right-of-way before the DOE representative can arrive and conduct a radiological survey, the city may transport the materials to the TSF (the city key custodian will have a key to the locked gate at the TSF). The materials will be deposited in a bin designated for unsurveyed material. Afterwards, the DOE representative will determine if the materials are radiologically contaminated by following the procedures outlined in Section A.6.4. Figure AB2 summarizes the contingency actions that will be taken as a result of major unplanned excavations or erosional events.

A.6.3 Minor Planned and Unplanned Excavations

The city is responsible for notifying DOE of minor planned excavations a minimum of 1 day before they are conducted and for notifying DOE of minor unplanned excavations within 24 hours of the event. In either situation, the DOE representative will arrive at the excavation site as soon as practical to radiologically survey the excavated material. If the surface cleanup standard is not exceeded, the material will not be required to be removed. If the surface cleanup standard is exceeded, city workers will remove the radiologically contaminated material and transport it to the TSF. Sections A.6.4 through A.6.10 describe the procedures that will be followed for surveying, removing, transporting, and disposing of the materials.

In the unlikely situation where excavated materials must be removed from a city right-of-way before the DOE representative can arrive and conduct a radiological survey, the city may transport the materials to a bin designated for unsurveyed materials at the TSF. Afterwards, the DOE representative will determine if the materials are radiologically contaminated by following the procedures outlined in Section A.6.4. Figure AB3 summarizes the contingency actions that will be taken during minor excavations.

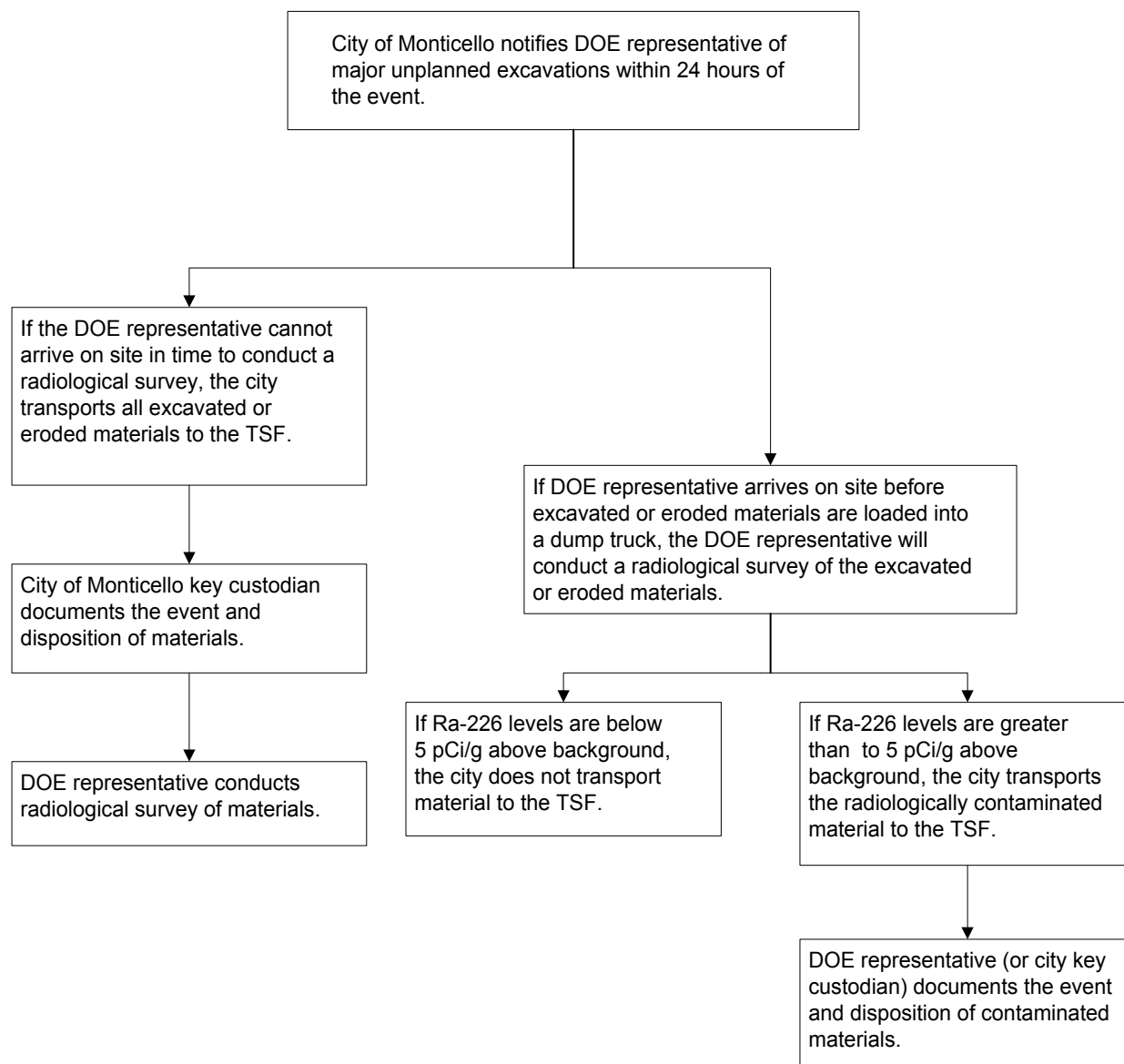


Figure AB2. Contingency Actions Associated with Major Unplanned Excavations or Erosional Events

A.6.4 Radiological Surveys

Before the DOE representative arrives at the excavation site, s/he will review the radiological assessment of the site to be excavated. At the excavation site, the DOE representative will conduct a radiological survey by measuring gross gamma levels with a gamma scintillometer (e.g., an Eberline EB600 multi-purpose instrument attached to a sodium iodide detector). A gamma instrument reading of 30 percent or more above background will require additional measurement with a delta scintillometer to determine if the Ra-226 concentration is 5 pCi/g or more above background. The survey methodology will vary depending on the type of excavation:

- At open-area excavations (e.g., road surface excavations), the DOE representative will survey the surface of the exposed area after asphalt is removed and the surface of each additional lift to be removed. Areas of soil with Ra-226 concentrations greater than 5 pCi/g above background will be considered radiologically contaminated.
- At trench excavations (e.g., utility line excavations), the DOE representative will survey the stockpile of excavated material. Areas of soil with Ra-226 concentrations greater than 5 pCi/g above background will be considered radiologically contaminated. For mapping purposes, the DOE representative also will survey the sidewalls, faces, and bottom of the trench; however, radiologically contaminated material from these areas will not be removed if it is outside the limits of the intended excavation.
- In areas where soil material has visibly been moved as a result of an erosional event, the DOE representative will survey the transported material. Areas of soil with Ra-226 concentrations greater than 5 pCi/g above background will be considered radiologically contaminated.

Details of these survey procedures and instrument operation are included in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*. At the completion of a radiological survey, the DOE representative will record the location and results of the survey on a detailed scaled map of the city streets and utilities.

DOE does not anticipate encountering suspect hazardous substances during excavation of city streets and utilities. Site assessments and inspections during remediation of adjacent contaminated properties indicate that hazardous substances other than radiologically contaminated material are rare or nonexistent. During the radiological survey of excavated material, the DOE representative will, however, inspect the material for suspect hazardous substances using the recognition criteria described in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*. In the unlikely event that a suspected hazardous substance is determined to be mixed with radiologically contaminated material, the DOE representative will isolate the material and make arrangements for qualified personnel to characterize and manage the material. The material will not be transported until risks and management requirements associated with the specific type of material are identified. The DOE representative will **not** take responsibility for a suspect hazardous substance if it is not radiologically contaminated, unless it is attributable to millsite or DOE operations.

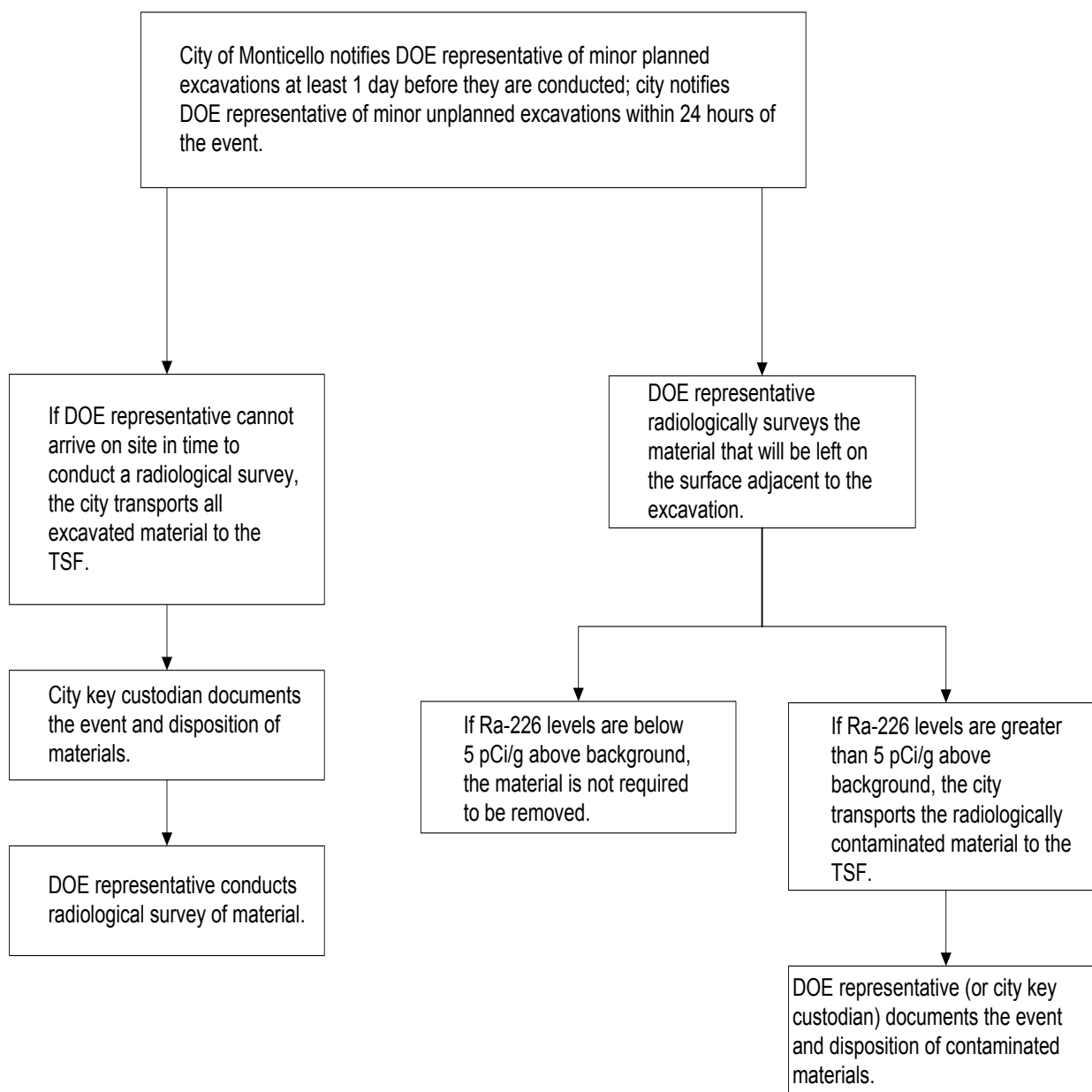


Figure AB3. Contingency Actions Associated with Minor Planned and Unplanned Excavations

A.6.5 Radiological Site Controls

The *Monticello Projects Health and Safety Plan* (DOE 1997) presently does not require occupational radiological controls during remediation of areas containing less than 140 pCi/g of Ra-226, mainly because residual radioactive materials from ore processing with Ra-226 concentrations below 140 pCi/g do not constitute an occupational health hazard. The U.S. Department of Transportation (DOT) defines radioactive materials above 70 becquerels per gram total activity (equivalent to 130 pCi/g Ra-226) as a hazardous commodity and does not regulate radioactive materials below this concentration. DOE will take a conservative approach and will implement radiological site controls when radiologically contaminated materials in

excess of 130 pCi/g of Ra-226 are found. However, no radiological site controls will be implemented when Ra-226 concentrations are below 130 pCi/g; that is, there will be no requirements for frisking, personal protective equipment, equipment decontamination, medical surveillance, access control, or posting at excavation sites. As a good housekeeping practice, the bed of the truck used to transport radiologically contaminated material will be shoveled or swept clean of visible solid material after each use.

DOE believes that the majority of the radiologically contaminated materials found during LTSM will be less than 130 pCi/g of Ra-226, mainly because radiological assessment data indicate that concentrations on the supplemental standards properties are well below 130 pCi/g. Verification and field assessment data on adjacent contaminated properties also indicate that concentrations above 130 pCi/g are rare or nonexistent.

In the unlikely event that radiologically contaminated materials in excess of 130 pCi/g of Ra-226 are found, the DOE representative will implement proper radiological controls (e.g., donning personal protective equipment, posting, frisking, decontaminating). Only workers who have completed Radiological Worker II Training will be allowed to enter the contamination area. Procedures for removing and transporting radiologically contaminated materials in excess of 130 pCi/g of Ra-226 are detailed in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

A.6.6 Reportable Quantity Releases

DOE does not anticipate that reportable quantities, as defined under 40 CFR 302, "Designation, Reportable Quantities, and Notification," will ever be released from the city streets rights-of-way. Given the radiological activity of contaminated materials left in place on the rights-of-way (see Section 3.2, "Radiological Assessment," of the Supplemental Standards Application), a worst-case release would be associated with Ra-226 concentrations of 110.4 pCi/g. A minimum of 175 cubic yards (yd³) (about 18 dump-truck loads) of this material would have to be released before the reportable quantity of 0.052 curie (for natural uranium in equilibrium with its daughters) was exceeded. Therefore, DOE does not anticipate a need to notify EPA or UDEQ concerning reportable quantity releases of radiologically contaminated materials. If a reportable quantity should ever be released, however, DOE will make a notification in accordance with 40 CFR 302.

A.6.7 Training

When radiologically contaminated materials having less than 130 pCi/g of Ra-226 are removed and transported, city workers will need to have completed LTSM Training, which describes the procedures that should be followed to maintain compliance with this LTSM Plan, and General Radiological Training, which describes the fundamental hazards associated with radioactive materials. To remove and transport contaminated materials in excess of 130 pCi/g of Ra-226, city workers will be required to complete the following training:

- LTSM Training;
- Radiological Worker II Training and annual refreshers;

- DOT Exemption training for Colorado and Utah; and
- Hazardous Materials Transportation Training, Modules 1, 2, 10, and 15.

To access the TSF, city workers must have completed LTSM Training and either General Radiological Training or Radiological Worker II Training.

DOE will provide this training to city workers who may be involved in excavation and transportation activities.

The DOE representative will be required to complete, at a minimum, the following training:

- Radiological Control Technician Training.
- Source Handler Training.
- Radiological Worker II Training and annual refreshers.
- LTSM Training.
- DOT Exemption Training.
- Hazardous Materials Transportation Training, Modules 1, 2, 10, and 15.
- Respirator Wearer Training.
- Delta and Gamma Scintillometer Training.
- Photo Ionization Detector Training.

A.6.8 Transportation of Radiologically Contaminated Materials

Radiologically contaminated materials will be transported from the city rights-of-way in accordance with applicable regulations, including (but not limited to) DOT regulations and the requirements imposed by the Utah State Highway Patrol Office. In the event of a spill or other release of contaminated material to the environment, the transporter will follow the procedures for spill response outlined in Section A.6.9. To help prevent spills, the transporter will meet the following requirements for transporting contaminated material.

- Dump trucks will be equipped with end-dump tailgate “diapers,” which will be constructed of at least a 6-mil plastic (or equivalent) and will not allow soil or liquid leakage. The tailgate diaper will extend horizontally a minimum of 4 feet onto the floor of the dump bed, up the inside of the tailgate, and hang vertically a minimum of 12 inches over the outside of the tailgate. It also will cover the vertical edges of the tailgate and the horizontal edges of the floor of the dump bed by a minimum of 4 feet. The diaper will not interfere with the visibility of the tail lights, turn signals, or license plate.
- Radiologically contaminated materials will be transported with a bed cover (canvas or equal) over the loaded truck bed that will overlap the truck-bed sides, front, and back by a minimum of 6 inches. The truck will be equipped with a mechanical tarping device so that the person tarping the truck does so remotely or from the ground and is not required to climb onto or into the truck bed to cover the load.
- All radiologically contaminated material removed from a given area will be transported directly to the TSF. Contaminated material will not be transported to or deposited at any

other location. Interim storage of the material, either in or outside of the conveyance vehicle, will not be permitted outside of the supplemental standards properties.

- Reduced loads (# 50 percent of normal capacity) will be hauled when the contaminated material is saturated and could result in a flowable condition inside the truck bed.
- Trucks used to haul contaminated materials will carry one orange vest and two emergency triangles meeting DOT requirements. These items will be used in the event of a spill (see Section A.6.9).
- Truck CertificationC Trucks used to haul contaminated materials will have current DOT or Commercial Vehicle Safety Association certification of inspection. Proof of these certifications (normally in the form of a windshield sticker) will be required prior to the performance of work.
- Truck Maintenance ProgramC Trucks used to haul contaminated materials will be maintained in a condition that will avoid spillage. Operating levers controlling hoisting or dumping devices on haulage bodies will be equipped with a latch or other device that will prevent accidental starting or tripping of the mechanism. Tailgates will fit snugly against the dump bodies. Tailgate latching mechanisms will have a secondary back-up system (i.e., the primary latch actuator mechanism will be backed up with a mechanical “cam-over” system that is adjusted to fail positively in the event of a primary latch actuator malfunction; or, the latching mechanism will have an equivalent, acceptable mechanical locking system). All mechanisms will be maintained in proper working order so that the tailgate is securely latched when in a closed position. Worn, damaged, or weakened parts will be replaced with new components that match the original equipment. An inspection and maintenance log, which may be reviewed at any time by DOE, will be kept in the vehicle.
- Maintenance Inspection and Testing ProgramC Trucks used to haul contaminated materials will be inspected and tested at the beginning of each day that they are used for hauling contaminated materials. The truck driver will ensure that tailgates, latching mechanisms, and hoisting/dumping devices operate properly.

A.6.9 Spill Response

DOT regulations do not require preparation of a spill response plan for unregulated materials. As a best management practice, however, the transporter will follow certain procedures in the event of a contaminated material spill. The truck driver will stop the truck and try to secure the leak. The driver will then (1) don an orange vest; (2) place one emergency triangle in front of the truck; (3) place one emergency triangle behind the truck; and (4) notify his/her immediate supervisor and the DOE representative. The supervisor of the truck driver also will notify the DOE representative to ensure that DOE is aware of the spill. The DOE representative will determine the extent of the spill (with radiological instrumentation, if needed) and will then require the city of Monticello to recover the spilled material and transport it to the TSF. DOE will ensure that spills are properly managed.

The DOE representative will report the spill to the LTSM Program Manager and will document the spill on the DOEBGJO Incident Report form (GJO 1743). After an investigation into the cause of the spill, the DOE representative will recommend methods for avoiding spills in the future and relay this information to the responsible parties. Spills will be reported in the annual inspection reports.

A.6.10 Temporary Storage Facility

DOE will construct a TSF either near the Monticello repository site or the Monticello Millsite to allow for future management of radiologically contaminated materials generated during LTSM activities. Because the TSF will be owned and managed by DOE, it will be operated in accordance with 10 CFR 835, "Occupational Radiation Protection." The TSF will consist of several features, including six 13-yd/roll-off bins for storing radiologically contaminated material containing Ra-226 concentrations less than 130 pCi/g and unsurveyed materials; a Drum Storage Area for storing radiologically contaminated material containing Ra-226 concentrations greater than 130 pCi/g; and a Hazardous Substance Area, for temporarily storing radiologically contaminated material that is mixed with a hazardous substance (Figure AB4). If larger quantities of material containing Ra-226 concentrations greater than 130 pCi/g are found, then the roll-off bins will be used.

TSF Radiological Controls

Access: Access will be controlled by a wildlife fence and a locked gate. Only the DOE representative and representatives from the city of Monticello and UDOT will have access to the gate key. The key custodian who unlocks the gate will record the following information in the TSF Record Book each time material is brought to the TSF:

- Date
- Time
- Name of driver
- Origin of material being placed in the TSF
- Type of material (i.e., <130 pCi/g, >130 pCi/g, hazardous/unknown)
- Estimated cubic yardage of material being placed in the TSF
- If unsurveyed material is brought to the TSF in an emergency situation, a notation that the DOE representative needs to determine if the material is radiologically contaminated and conduct an inspection for suspect hazardous substances at the TSF.

Only the DOE representative and authorized city of Monticello workers (those who have completed the training outlined in Section A.6.7) will be allowed access to the TSF. All other persons must be escorted by the DOE representative.

Posting: Controlled Area signage, as defined by the *Grand Junction Office Site Radiological Control Manual* (MACTECBERS and WASTRENBGJ Manual GJO 3), will be posted along the TSF fence and gate. A sign stating "Low-Level Radioactive Soil: This receptacle (or area) contains soil and materials contaminated with uranium ore and mill tailings; radioactivity concentrations exceed the environmental cleanup levels specified in 40 CFR 192" will be posted and on each container in use in the TSF. Radioactive Material Area signage will be posted in the

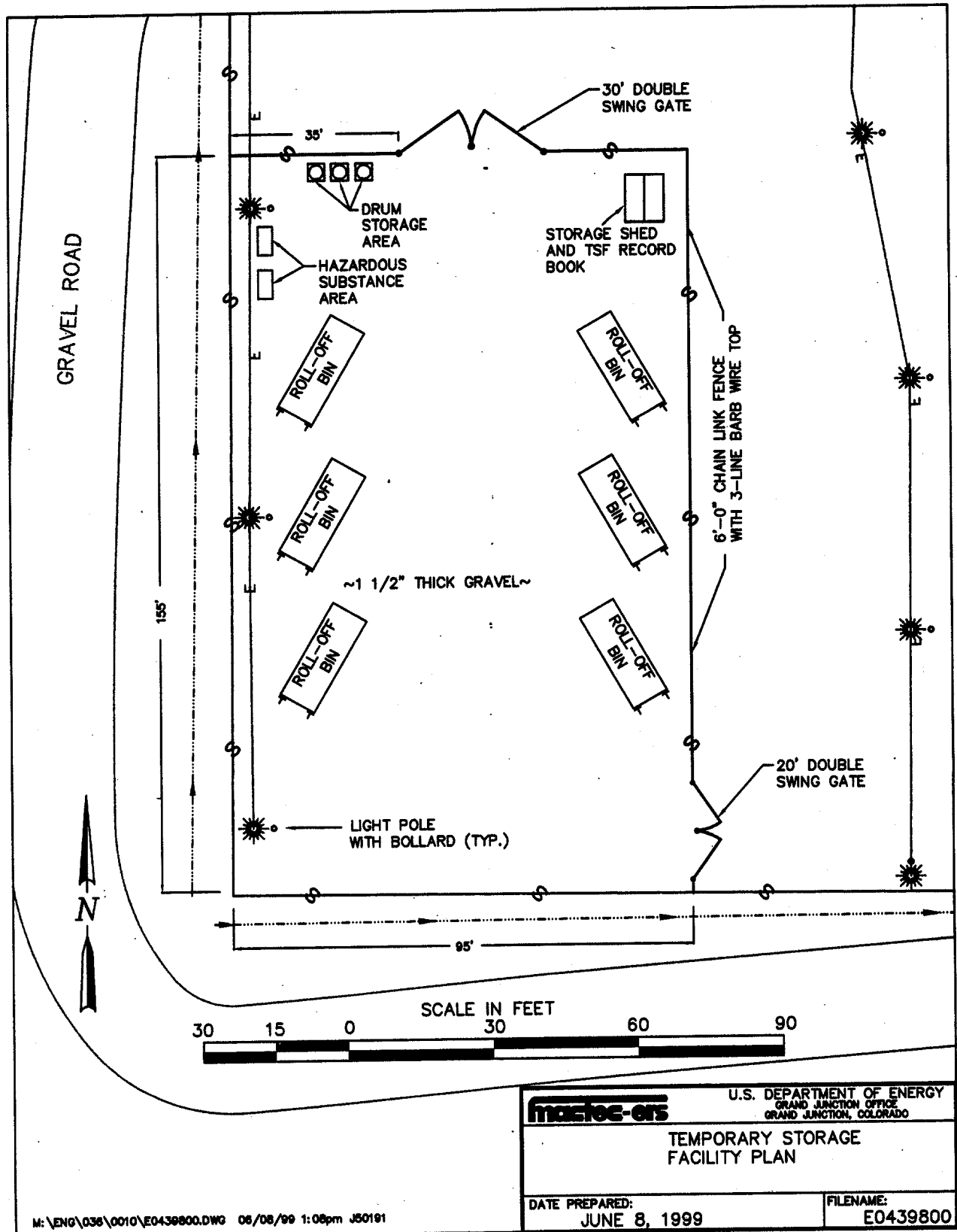


Figure A-4. Temporary Storage Facility Conceptual Plan

Drum Storage Area (or on a roll-off bin) when materials exceeding 130 pCi/g of Ra-226 are stored there.

Training: Because the entire TSF will be managed as a Controlled Area, personnel entering the TSF will be required to have completed General Radiological (or Radiological Worker II Training) and LTSM Training or will be escorted by the DOE representative.

Decontamination: When radiologically contaminated materials having Ra-226 concentrations less than 130 pCi/g are transported to the TSF, the bed of the truck used to transport radiologically contaminated material will be shoveled or swept clean of visible solid material after each use. When radiologically contaminated materials having Ra-226 concentrations in excess of 130 pCi/g are transported to the TSF, the truck and other equipment involved will be decontaminated in accordance with the DOE representative's directives.

Secondary Containment: The slope of the facility will be such that precipitation and snow melt will drain out of the area. The metal roll-off bins and the drums containing material exceeding 130 pCi/g of Ra-226 will be lined with 6-mil-thick plastic. Hazardous substance containers will be managed in accordance with a plan developed for the specific type of hazardous substance present. Development of this plan is discussed in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

TSF Operations

Radiologically contaminated materials will be brought to the TSF by city workers. Materials having Ra-226 concentrations less than 130 pCi/g will be dumped directly into a roll-off bin, and the bin will be tarped; materials having Ra-226 concentrations in excess of 130 pCi/g will be placed in a container in the Drum Storage Area. If quantities are more than can be stored in the drums, then a roll-off bin will be used.

In emergency situations, city workers may bring unsurveyed material to the TSF. This material will be dumped directly into an empty bin and tarped. The bin will be marked for subsequent measurement and segregation by the DOE representative. Following the procedures outlined in Section A.6.4, the DOE representative will radiologically survey the material to determine if it exceeds the surface cleanup standard. Materials exceeding the cleanup standard will be left in the roll-off bin. Materials not exceeding the cleanup standard will be removed to an area outside of the TSF for use as a backfill source. This segregation is necessary to minimize the volume of contaminated material that is hauled to the permanent disposal site. To physically accomplish the material segregation, the DOE representative will contact the city of Monticello; the city will then provide a front-end loader and operator to move the material.

For permanent disposal, DOE will ship radiologically contaminated materials to an appropriately licensed facility (e.g., the Cheney Disposal Cell near Whitewater, Colorado, which is owned and operated by DOE). DOE will make shipments when the roll-off bins or Drum Storage Area reach 75-percent capacity. Shipping will be conducted in accordance with applicable DOT regulations. DOE's current DOTBE01594 Exemption Permit will be updated to reflect hauling to the final disposal location.

DOE will be responsible for maintaining year-round access to and at the TSF. This will be accomplished by using the city workforce, a local contractor, or a combination of the two.

Inspections

As a best management practice, quarterly inspections of the TSF will be conducted. These inspections will include:

1. Evaluation of the condition of containers,
2. Evaluation of the condition of labels and postings, and
3. Evaluation of the condition of fence.

If any replacement or repairs are necessary, those needs will be documented on the inspection form. The next inspection will document the actual repairs made. These forms will be filed in chronological order in the TSF record book.

A.7 CERCLA 5-Year Reviews

DOE will prepare and submit to EPA a report fulfilling the requirements of a Level I CERCLA 5-year review every 5 years as long as radiologically contaminated materials remain on site above EPA standards (40 CFR 192) or until EPA no longer requires submittal of such a report. The purpose of the report will be to evaluate whether the “response action” (i.e., leaving radiologically contaminated materials in place on the supplemental standards properties and implementing contingency actions when contaminated materials are disturbed) remains protective of public health and the environment. In addition, DOE will evaluate whether its LTSM activities are conducted at an appropriate level of effort to ensure protection of public health and the environment. The CERCLA 5-Year Review Report will be available for public review at DOEBGJO and the DOE representative’s Monticello office. In accordance with EPA guidance (EPA 1991 and 1994), the report will include the following general information.

- I. Background
 - A. Introduction
 1. Name of site
 2. Reason for 5-year review
 3. Level of 5-year review
 4. Summary results
 5. Community relations activities
 - B. Site History
 1. Location
 2. Nature of hazards
 - C. Remedial Objectives
 1. Remedy selected
 2. ARARs
 3. Remedial action conducted

- II. Site Conditions
 - A. Summary of 5-year review
 - 1. Scope
 - 2. Level of review
 - B. Review Results
 - 1. Data review
 - 2. Site visit
 - 3. Monitoring results
 - 4. Areas of noncompliance
- III. Recommendations
 - A. Statement of protectiveness
 - B. Recommended activities
 - C. Implementation requirements
 - D. Next review
- IV. Signature Block

A.8 Records

DOE will maintain a permanent file at the DOEBGJO in Grand Junction, Colorado, that will contain information and data associated with the supplemental standards properties. Information in the file will be available for review by EPA, UDEQ, and the public. Complete and accurate reports concerning supplemental standards surveillance, maintenance, and inspection activities will be maintained in accordance with the procedures in 41 CFR Section 101.11, "Archives, Records, and Records Management," the DOEBGJO contractor's *General Management Procedures* (MACTECBERS Manual MACB1000) and the GJO LTSM working file index. DOE also will keep a duplicate of the permanent file at Monticello for local reference and use. The permanent file for the supplemental standards properties will include the following:

- The LTSM plans for supplemental standards properties.
- Applications for all supplemental standards properties.
- Legal descriptions and maps of supplemental standards properties.
- Legal documentation of DOE's agreements, including copies of cooperative agreements for financial assistance, memoranda of understanding, deed annotations, and relevant RAAs.
- Final construction designs for locations where partial remediation occurred.
- Pertinent design and construction documents and drawings.
- Radiological as-built drawings, where relevant.
- Site atlas (vicinity, topographic, and base maps).
- Baseline and aerial photographs.

- Routine surveillance reports.
- Annual inspection reports and records.
- CERCLA 5-Year Review Reports.
- Follow-up or contingency inspection reports; preliminary assessments, reports, and records.
- Custodial maintenance or repair reports and records.
- Corrective action plans, reports, and records.
- Quality Assurance Program Plan.
- Shipping records.

The permanent DOEBGJO and Monticello site files will be updated as necessary after completion of the annual site inspections.

A.9 Health and Safety

Health and safety plans are required by 29 CFR 1910.120, “Hazardous Waste Operations and Emergency Response,” for use at uncontrolled hazardous waste sites. Because health risks associated with the potential activities at the city streets rights-of-way have been analyzed and found to be acceptable (see Health Risk Assessment in the City Streets and Utilities Supplemental Standards Application) and because disposition of contaminated materials will have been approved (upon approval of this application), the activities associated with this LTSM plan will not fall within the scope of 29 CFR 1910.120. Thus, a project health and safety plan will not be prepared for these LTSM activities. Certain procedures and requirements normally associated with a health and safety plan, such as site control, spill response, training requirements, and transportation procedures, are specified for LTSM activities in Section A.6, “Contingency Action Plan,” of this document.

A.10 Quality Assurance

The *Long-Term Surveillance and Maintenance Program Quality Assurance Program Plan* (QAPP) (DOE 1996), which covers all LTSM Program sites assigned to DOEBGJO, will govern the activities associated with LTSM activities on the city streets rights-of-way. The QAPP specifies requirements for:

- ~ Program planning.
- ~ Program activities, including inspections, site maintenance, corrective actions, and emergency responses.
- ~ Record-keeping and preservation of records.

- ~ Surveillance and audits of program compliance with quality assurance requirements.

Project-level quality control requirements will be specified in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

A.11 Procedures for Revising and Updating the LTSM Plan

This LTSM Plan may be revised, updated, or renewed upon concurrence of EPA and UDEQ. Portions of the document may be terminated by mutual written agreement of DOE and the city of Monticello, or by either party, upon 30-day notice to the other party and upon concurrence of EPA and UDEQ. EPA and UDEQ reviews will be conducted in accordance with the provisions of the *Monticello Site Federal Facility Agreement* (FFA) (DOE 1988b). DOE will not be relieved from continuing obligations under CERCLA, even if all involved parties agree to invalidate this LTSM Plan.

A.12 Reservation of Rights

Nothing in this document will be construed to abridge the rights of the parties under CERCLA, the FFA negotiated in 1988, or other applicable Federal and State laws.

References

MACTECBERS. Manual MACB1000, *General Administrative Procedures*, Grand Junction, Colorado.

MACTECBERS and WASTRENBGJ. Manual GJO 3, *Grand Junction Office Site Radiological Control Manual*, Grand Junction, Colorado.

U.S. Code of Federal Regulations

Title 10, "Energy"

Title 29, "Labor"

Title 40, "Protection of Environment"

Title 41, "Public Contracts and Property Management"

U.S. Department of Energy, 1988a. Direction from John E. Baublitz, Acting Director, Office of Remedial Action and Waste Technology, Office of Nuclear Energy, Washington, D.C. to Don Ofte, Manager, Idaho Operations Office, November 30.

_____, 1988b. *Monticello Site Federal Facility Agreement*, U.S. Environmental Protection Agency Region VIII, State of Utah Department of Health, and U.S. Department of Energy, agreement pursuant to Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, effective February 24, 1989.

U.S. Department of Energy, 1996. *Long-Term Surveillance and Maintenance Program Quality Assurance Program Plan*, MACB2152, Revision 0, prepared by MACTECBERS for U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, December.

_____, 1997. *Monticello Projects Health and Safety Plan*, MACBMRAP 1.3.4, prepared by MACTECBERS for U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, June.

U.S. Department of Transportation, 1996. *Exemption Number DOT-E 10594 (PTE), 3rd Revision* (September 3, 1996), authorized on October 11, 1996; on file at MACTECBERS, Grand Junction, Colorado.

U.S. Environmental Protection Agency, 1991. *Structure and Components of Five-Year Reviews*, OSWER Directive 9355.7B02, Office of Solid Waste and Emergency Response, Hazardous Site Control Division, Washington, D.C., May 23.

_____, 1994. *Supplemental Five-Year Review Guidance*, OSWER Directive 9355.7B02A, Office of Solid Waste and Emergency Response, Hazardous Site Control Division, Washington, D.C., July 26.

This page intentionally blank

Attachment A-1

**Outline for *LTSM Operating Procedures for
Monticello Supplemental Standards Locations***

This page intentionally blank

Outline for *LTSM Operating Procedures for Monticello Supplemental Standards Locations*

Glossary

- 1.0 Manual Overview
 - 1.1 Background
 - general overview; reference LTSM Plan, which is an appendix
 - 1.2 Responsibilities and Authorities
 - identify personnel, agencies, and contacts and describe general responsibilities and authorities
 - establish the DOE representative's work schedule and need for availability
 - establish turnover procedures when work is transferred to support personnel
- 2.0 Routine Surveillances
 - 2.1 Responsible Party
 - 2.2 Surveillance Routine—describe for each supplemental standard property
 - 2.3 Types of Surveillance Observations
- 3.0 Recording Observations
 - 3.1 Record Book Entries
 - how
 - what
 - when
 - 3.2 Photographic Records
 - how
 - what
 - when
- 4.0 Annual Inspections
 - 4.1 Responsible Party
 - 4.2 Inspection Routine—describe for each supplemental standard property
 - 4.3 Types of Inspection Observations—refer to checklists in LTSM Plan
 - 4.4 Requirements for Recording Observations
- 5.0 Reports
 - 5.1 Annual Inspection Report
 - define content, distribution, and responsible party
 - 5.2 CERCLA 5-Year Reviews
 - define content, distribution, and responsible party
- 6.0 Records Management
 - 6.1 Definition and Types of Records—working file index will be in appendix
 - 6.2 Record Distribution and Filing Requirements
 - 6.3 Responsible Parties

- 7.0 Radiological Surveys
 - 7.1 Responsible Party
 - 7.2 Procedures for Determining Extent of Contamination
 - 7.3 Comparison of Readings to Cleanup Standards
 - 7.4 Calibration and Use of the Eberline E-600 Ratemeter
 - 7.5 Calibration and Use of the EL-0018B Delta Scintillometer
 - 7.6 Procedures for Assessing Potentially Contaminated Soils in Roll-Off Bins
- 8.0 Suspect Hazardous Substances
 - 8.1 Identification and Determination of Suspect Hazardous Substances
 - 8.2 Removal and Containerization
 - 8.3 Decontamination of Equipment
 - 8.4 Health and Safety
 - 8.5 Transportation
 - 8.6 Management
- 9.0 Radiologically Contaminated Materials in Excess of 130 pCi/g of Ra-226
 - 9.1 Removal and Containerization
 - 9.2 Decontamination of Equipment
 - 9.3 Health and Safety
 - 9.4 Transportation
 - 9.5 Management
- 10.0 Transportation of Radiologically Contaminated Material
 - 10.1 Requirements of DOT Exemption (attach exemption)
 - 10.2 Maintenance Inspection for Equipment
 - 10.3 Spill Prevention Plan
- 11.0 Management of the Temporary Storage Facility
 - 11.1 Attach appropriate procedures from the Radiation Protection Program Plan and the Site Specific Radiological Controls Manual
 - 11.2 Maintenance Inspection for Equipment
- 12.0 Quality Control Requirements
- 13.0 Change Control Process
 - 13.1 Change Levels and Notification Requirements
 - 13.2 Page Change Procedure

Attachment A-2

**Preliminary Inspection Checklist
Annual Site Inspection**

This page intentionally blank

Preliminary Inspection Checklist Annual Site Inspection

Site: City of Monticello Rights-of-Way

Date Prepared:

Date of Last Inspection:

Type of Inspection: Annual Inspection

Date of Next Inspection:

I. Preparation for the Inspection

- A. Review the *LTSM Plan for City of Monticello Streets and Utilities*.
- B. Review the surveillance records associated with the area.
- C. Review the Cooperative Agreement between the city and DOE
- D. Review previous inspection reports, field notes from previous inspections, maps and photographs of the site, and other documents as necessary to become familiar with site history, current conditions at the site, and results of recent maintenance.
- E. Review site access procedures and protocols. Notify the on-site DOE representative and the DOE Project Manager (Mr. Joel Berwick, 970 248-6328).
- F. Review specific observations to be made and problems to be studied or resolved during the inspection.

II. Site Inspection

The inspection team will investigate the following features

- Erosional features on city rights-of-way
- Change in land use on city rights-of-way
- Unauthorized excavation activities

This page intentionally blank

Appendix B

Highways 191 and 666 Rights-of-Way Within the City Limits of Monticello Long-Term Surveillance and Maintenance Plan

Note: This appendix is excerpted from Appendix E of *MVP Application for Supplemental Standards—Highways 191 and 666 Rights-of-Way*, August 1999 (Document Number E0386903). With the exception of the headers, footers, and numbering system, the wording in this appendix is identical to Appendix E of the original document. This appendix is provided to demonstrate continuity with the plans developed at the time of application for supplemental standards. Updated changes to the administration and quality assurance of the LTSM program are provided in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual*.

LTSM Checklist for Highways 191 and 666 Rights-of-Way

The Monticello LTSM Representative shall:

1. Inspect the Highways 191 and 666 rights-of-way once a week for evidence of erosion and unauthorized excavations (see Section 2.5).
2. Once a week, obtain the schedule of planned excavations by calling the city of Monticello and requesting the excavation schedule from the Blue Stakes program (see Section 2.5).
3. Inspect the Highways 191 and 666 rights-of-way after storm events that produce 2.8 inches or more of rain within a 24-hour period (see Section 2.5).
4. Walk the base of the Highway 191 embankment where it crosses Montezuma Creek every 3 months. Look for erosion and unauthorized excavations (see Section 2.5).
5. Conduct radiological surveys at each site of a major or minor, planned or unplanned excavation and at areas where soil has visibly eroded from the rights-of-way (see Sections 2.5 and 3.0).
6. When conducting radiological surveys, check for suspect hazardous substances (see Section 5.0).
7. Handle and transport radiologically contaminated materials to the TSF in accordance with Section 4.0 of this manual and Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2001b), Sections 6.0 and 7.0.
8. Record notes and observations in the Highways 191 and 666 Record Book (see *Long-Term Surveillance and Maintenance Administrative Manual* [DOE 2001a], Section 9.0).

Contents

B.1	Administration of the LTSM Program.....	BB7
B.2	Restrictions on Land Use.....	BB8
B.3	Passive Institutional Controls	BB8
B.4	Active Institutional Controls.....	BB9
B.5	Routine Surveillance.....	BB10
B.6	Annual Inspections and Reports	BB10
B.7	Contingency Action Plan.....	BB11
B.7.1	Major Planned Excavations.....	BB11
B.7.2	Major Unplanned Excavations	BB12
B.7.3	Minor Planned and Unplanned Excavations	BB15
B.7.4	Radiological Surveys.....	BB15
B.7.5	Radiological Site Controls.....	BB15
B.7.6	Reportable Quantity Releases	BB17
B.7.7	Training	BB17
B.7.8	Transportation of Radiologically Contaminated Materials	BB18
B.7.9	Spill Response	BB19
B.7.10	Temporary Storage Facility.....	BB20
B.8	CERCLA 5-Year Reviews.....	BB23
B.9	Records	BB24
B.10	Health and Safety.....	BB25
B.11	Quality Assurance.....	BB25
B.12	Procedures for Revising and Updating the LTSM Plan.....	BB26
B.13	Reservation of Rights.....	BB26
	References.....	BB26

Figures

Figure BB1.	Contingency Actions for Major Planned Excavations.....	BB13
BB2.	Contingency Actions for Major Unplanned Excavations or Erosional Events....	BB14
BB3.	Contingency Actions for Minor Planned and Unplanned Excavations	BB16
BB4.	Temporary Storage Facility Conceptual Plan.....	BB21

This page intentionally blank

Highways 191 and 666 Rights-of-Way LTSM Plan

Should supplemental standards be accepted by the U.S. Environmental Protection Agency (EPA) and State of Utah Department of Environmental Quality (UDEQ) for the Highways 191 and 666 rights-of-way, radiologically contaminated material will remain in place, and a long-term surveillance and maintenance (LTSM) management strategy will be implemented. For the purposes of this document, ***radiologically contaminated material*** is defined as the residual radioactive material resulting from U.S. Department of Energy (DOE)-related uranium and vanadium ore processing that contains radium-226 (Ra-226) concentrations exceeding background by more than 5 picocuries per gram (pCi/g) in the surficial 15 centimeters of soil averaged over 100 square meters, or by more than 15 pCi/g in successively deeper 15-centimeter layers. The LTSM management strategy will include

- Implementing institutional controls (e.g., placing restrictions on land use).
- Conducting routine surveillances and inspections.
- Implementing contingency actions if radiologically contaminated materials are encountered or disturbed in the future.
- Preparing reports for regulatory agencies.
- Keeping records.

Sections B.2 through B.13 define and describe these management actions.

B.1 Administration of the LTSM Program

Initially, DOE's LTSM obligations will be carried out by the project staff assigned to the ongoing remedial actions in Monticello. Within DOE Washington headquarters, overall responsibility and authority for Monticello activities rests with the Assistant Secretary for Environmental Management, acting through the Office of Southwestern Area Programs, Division of Off-Site Programs. Field management responsibility and authority at Monticello are delegated to the Manager of the DOE Albuquerque Operations Office, acting through the Assistant Manager for Environmental/Project Management. The authority, responsibility, and accountability for implementing and administering the Monticello projects are, in turn, delegated to the Manager of the DOE Grand Junction Office (GJO), who assigns coordination, management, and operational staff as necessary. The Office of Chief Counsel at the Albuquerque Operations Office is DOE's legal advisor. Other organizations within the Albuquerque Operations Office provide financial, procurement, and real-estate management support.

DOEBGJO was assigned responsibility for the LTSM Program on January 1, 1989 (DOE 1988a). Because the Monticello sites were once part of DOE's former Surplus Facilities Management Project, all long-term activities at Monticello were specifically included in the scope of the LTSM Program. Upon EPA's and UDEQ's approval of this supplemental standards application, administrative and operational responsibilities for the properties will be implemented and administered under the existing remedial action programs. Upon completion of these programs, administration of LTSM will be transferred to the LTSM Program. Transfer is expected to occur on October 1, 2001.

When administration of the LTSM activities is transferred to the LTSM Program, the DOE/BGJO contact for actions associated with the supplemental standards locations will be a Monticello-based DOE representative, who may be a DOE employee or a contractor to DOE. The representative will reside in Monticello on a full-time basis and will be on call 24 hours a day, 7 days a week. When the representative leaves the Monticello area, he or she will ensure that backup personnel are available to perform the duties required of the representative. The contact address will be:

DOE Representative (LTSM Program)
U.S. Department of Energy
7031 South Highway 191
P.O. Box 909
Monticello, UT 84535
(435) 587B4011

DOE will be responsible for constructing a Temporary Storage Facility (TSF) either near the Monticello repository site or the Monticello Millsite to manage radiologically contaminated materials generated under the LTSM Program. Operations at this facility are discussed in Section B.7.10.

DOE will enter into a Memorandum of Understanding (MOU) with the Utah Department of Transportation (UDOT) wherein the parties will agree on the future management of the Highways 191 and 666 rights-of-way within the Monticello city limits. Sections B.2 through B.13 describe the management actions that will occur under the LTSM Program.

B.2 Restrictions on Land Use

- UDOT will maintain the highway rights-of-way as rights-of-way and will not allow permanent habitable structures on them. Short-term use consistent with a public highway will be permitted. Typical highway right-of-way activities include (1) transit by the traveling public; (2) construction, maintenance, and repair work by UDOT and utility companies; and (3) emergency access for firefighting, law enforcement, and medical or disaster response.

B.3 Passive Institutional Controls

- UDOT will allow DOE to annotate the supplemental standards property deeds with (1) a warning that radiologically contaminated materials are present; (2) a brief description of the nature, location, and level of contamination; and (3) a description of the risks associated with the contamination. Annotation is intended to permanently delineate the extent and nature of contamination and to ensure that persons purchasing or using the properties in the future receive proper notification of conditions.
- DOE will provide the San Juan County Recorder with copies of the “Radiological As-Built” for each property. The County Recorder will copy and bind the as-builts in a county record book and cross-reference them to the associated property deeds.

B.4 Active Institutional Controls

- DOE will conduct regular surveillances and inspections (see Sections B.5 and B.6) of the highway rights-of-way to detect changes in land use or conditions that may affect the protectiveness of supplemental standards (such as unauthorized excavations or erosion).
- UDOT will meet with the DOE representative on an annual basis to review the MOU and discuss upcoming projects and maintenance work. Each year, UDOT will provide DOE with a copy of the Statewide Transportation Improvement Plan (STIP), which lists UDOT's planned highway improvements for a 5-year period, and a copy of the Spot Improvement Plan, which lists UDOT's planned improvements for a 6- to 12-month period. Should UDOT not submit a copy of the STIP to DOE, DOE will request a copy, which UDOT will supply. DOE will make note of all the **major planned** and **minor planned excavations** that will occur annually on the rights-of-way by UDOT and other entities. DOE will notify the city of Monticello and UDEQ of UDOT's major planned excavations.
- For the purposes of this document, **planned excavations** are those listed in UDOT's STIP, Spot Improvement Plan, or annual budget. **Major excavations** include those that entail major intrusions into the right-of-way embankments, such as installation of a culvert beneath a paved surface, replacement of road base beneath a paved surface, or removal and replacement of fill material comprising an embankment. **Minor excavations** are those that can be made with hand tools or hand-operated mechanical tools (i.e., post-hole augers). UDOT's description of major excavations will include the location, extent, and dates of the planned disturbance.
- Because other entities, such as utility companies, must obtain a permit from UDOT prior to excavating in the highway rights-of-way, UDOT will be responsible for contacting DOE by the next business day when an excavation permit application is received or issued.
- For all contracted work occurring on the highway rights-of-way, UDOT will keep DOE apprised of prerequisite-construction schedules, including the design, bid, and construction start of projects.
- In addition to UDOT's annual notification of projects to DOE, UDOT will notify DOE a minimum of 2 weeks before major excavations are to begin. UDOT will make the notification regardless of who is performing the work (e.g., contractor or utility company). Notice will be provided in writing to the DOE representative at the local Monticello address. The DOE representative will notify the city of Monticello and UDEQ of UDOT's major planned excavations 2 weeks before the event.
- UDOT will notify DOE a minimum of 1 day before minor excavations are planned. Notification will be provided in writing or by telephone to the DOE representative in Monticello.
- In the event of a major or minor unplanned excavation on the highway rights-of-way, either by UDOT or others, UDOT will provide verbal notice to DOE by the next business day of discovery of the excavation, followed by a written notice within 5 working days. **Unplanned excavations** are those that are not planned but are necessitated by an emergency situation

(e.g., a utility line break) or occur as a result of a natural event (e.g., a flood, storm, or subsidence event).

B.5 Routine Surveillance

DOE will be responsible for routine surveillance of the highway rights-of-way. For the purposes of this document, **surveillance** means routine observations that do not require the involvement of formal inspection teams. The DOE representative will conduct surveillances of the rights-of-way to ensure that (1) the restrictions on land use are enforced by UDOT, (2) active institutional controls remain effective, and (3) a “presence” is created at the properties to encourage adherence to DOE’s LTSM requirements. Results of the surveillances will be documented through logbook entries. Detailed procedures for completing surveillance documentation are described in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

Routine surveillance of the highway rights-of-way will consist of

- ~ A weekly drive-by inspection of the rights-of-way to determine if erosional events or unauthorized excavations have occurred.
- ~ Periodic inspections of the rights-of-way after large (25-year or greater) storm events to determine if erosional events have occurred.
- ~ A quarterly (every 3 months) walk-around of the base of the Highway 191 embankment where it crosses Montezuma Creek to determine if erosional events or unauthorized excavations have occurred.
- ~ A physical visit to each site of a planned or unplanned excavation to ensure that activities conducted at the excavation meet the requirements outlined in DOE’s contingency action plan (Section B.7).

Section B.7 describes the actions that will be followed if the DOE representative discovers visibly transported radiologically contaminated materials.

B.6 Annual Inspections and Reports

DOE will conduct an annual inspection of the highway rights-of-way to document site conditions and land use. For the purposes of this document, **inspection** means review and observation by a formally constituted team for purposes of quality assurance and oversight, mobilized either at annual intervals or in response to specific concerns. Inspection team members will be provided by DOE’s LTSM Program, will be qualified in their fields, and will be trained in the requirements of the supplemental standards program.

In general, the inspection team will begin each inspection with a review of the surveillance records created by the on-site DOE representative. Areas of concern or special problems will be noted and investigated. Several transects across each property will be walked to ensure a thorough inspection. Primarily, the inspection team will look for physical disturbances and for changes in land use. Detailed procedures for conducting annual inspections are described in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

During the first 5 years of the LTSM Program in Monticello, DOE will prepare an annual inspection report and submit it to UDEQ and EPA within 90 days after completion of the annual inspection. An exception to the 90-day time frame will be made if the inspectors find an unsafe or hazardous condition that is related to the presence of radiologically contaminated material. If this situation occurs, UDEQ and EPA will be notified immediately, and the annual report will be submitted within 60 days. After the first 5 years of the LTSM Program, DOE will continue to submit the annual inspection report to UDEQ but will submit the report to EPA only if radiologically contaminated material was removed during the year. DOE will submit annual inspection reports until UDEQ and EPA no longer require them.

Annual inspection reports will be available for public review at DOEBGJO and the DOE representative's Monticello office. These annual reports, along with supporting documentation in the permanent files, will serve to (1) document the performance history of the supplemental standards locations; (2) provide DOE, EPA, and UDEQ with the information necessary to forecast future surveillance and maintenance needs; and (3) provide information to the public to demonstrate that site integrity is being maintained. The annual reports will contain the following information:

- Narrative of site inspection, results, conclusions, and recommendations.
- Summary of any spills that may have occurred during the previous year (see Section B.7.9).
- Relevant supporting documentation.
- Site inspection map and other drawings, maps, or figures, as required.
- Inspection photographs and a photographic log sheet if new or changed conditions warrant photographic documentation.
- Recommendations for additional follow-up inspections, repair, or custodial maintenance, if required.
- Recommendations for follow-up or contingency inspection reports, if required.

B.7 Contingency Action Plan

If radiologically contaminated materials are encountered during construction activities or are disturbed as a result of natural events, DOE and UDOT will be required to take specific contingency actions. These actions and DOE's and UDOT's operational responsibilities are outlined in the following sections.

B.7.1 Major Planned Excavations

UDOT, UDOT contractors, and utility companies may encounter radiologically contaminated materials during routine maintenance, repairs, and/or construction on the highway rights-of-way. UDOT is responsible for notifying DOE of its major planned excavations on an annual basis and again 2 weeks before the event. DOE is responsible for notifying the city of Monticello and UDEQ of UDOT's major planned excavations 2 weeks before the event. DOE will evaluate

UDOT's proposed excavation activities on a case-by-case basis to determine if a remedial action design is required to remove radiologically contaminated material. If a design is required, DOE will perform a radiological characterization (which determines the nature and extent of radiological contamination) and, if remedial action is warranted, will develop a remedial action design compatible with UDOT construction activities. Remedial actions will be implemented through a Remedial Action Agreement (RAA) between DOE and UDOT that will be approved by UDEQ, Division of Radiation Control.

If remedial action is not warranted, the DOE representative will be on site during UDOT's construction operation to radiologically survey excavations. All material that will *not* be placed back into the excavation will be surveyed. If the surface cleanup standard (5 pCi/g Ra-226 above background) is not exceeded, no action will be taken by DOE. If the surface cleanup standard is exceeded, DOE will contact the city of Monticello to remove and transport the radiologically contaminated materials to the TSF. Alternatively, UDOT may remove and transport radiologically contaminated materials after coordinating with DOE and the city of Monticello.

Sections B.7.4 through B.7.10 describe the procedures that will be followed for surveying, removing, transporting, and disposing of contaminated materials. Figure BB1 summarizes the contingency actions that will be taken for major planned excavations.

B.7.2 Major Unplanned Excavations

If a major excavation along a highway right-of-way is conducted by UDOT, a utility company, or a UDOT contractor as a result of an unplanned event, UDOT will be responsible for notifying DOE within 24 hours of the event. The DOE representative will arrive at the scene as soon as practical to radiologically survey excavated material that has not and will not be returned to the excavation. The DOE representative also will radiologically survey visibly transported (e.g., by a storm event) soil material if it is discovered during a routine surveillance. Section B.7.4 describes the instrumentation and methods DOE will use to survey the excavated or eroded material.

If the surface cleanup standard is not exceeded, the excavated or transported material will not be required to be removed. If the surface cleanup standard is exceeded, DOE will contact the city of Monticello to remove the radiologically contaminated material and then transport it to the TSF. Alternatively, UDOT may remove and transport radiologically contaminated materials after coordinating with DOE and the city of Monticello. Sections B.7.5 through B.7.10 describe the procedures that will be followed for removing, transporting, and disposing of contaminated materials. Figure BB2 summarizes the contingency actions that will be taken as a result of major unplanned excavations or erosional events.

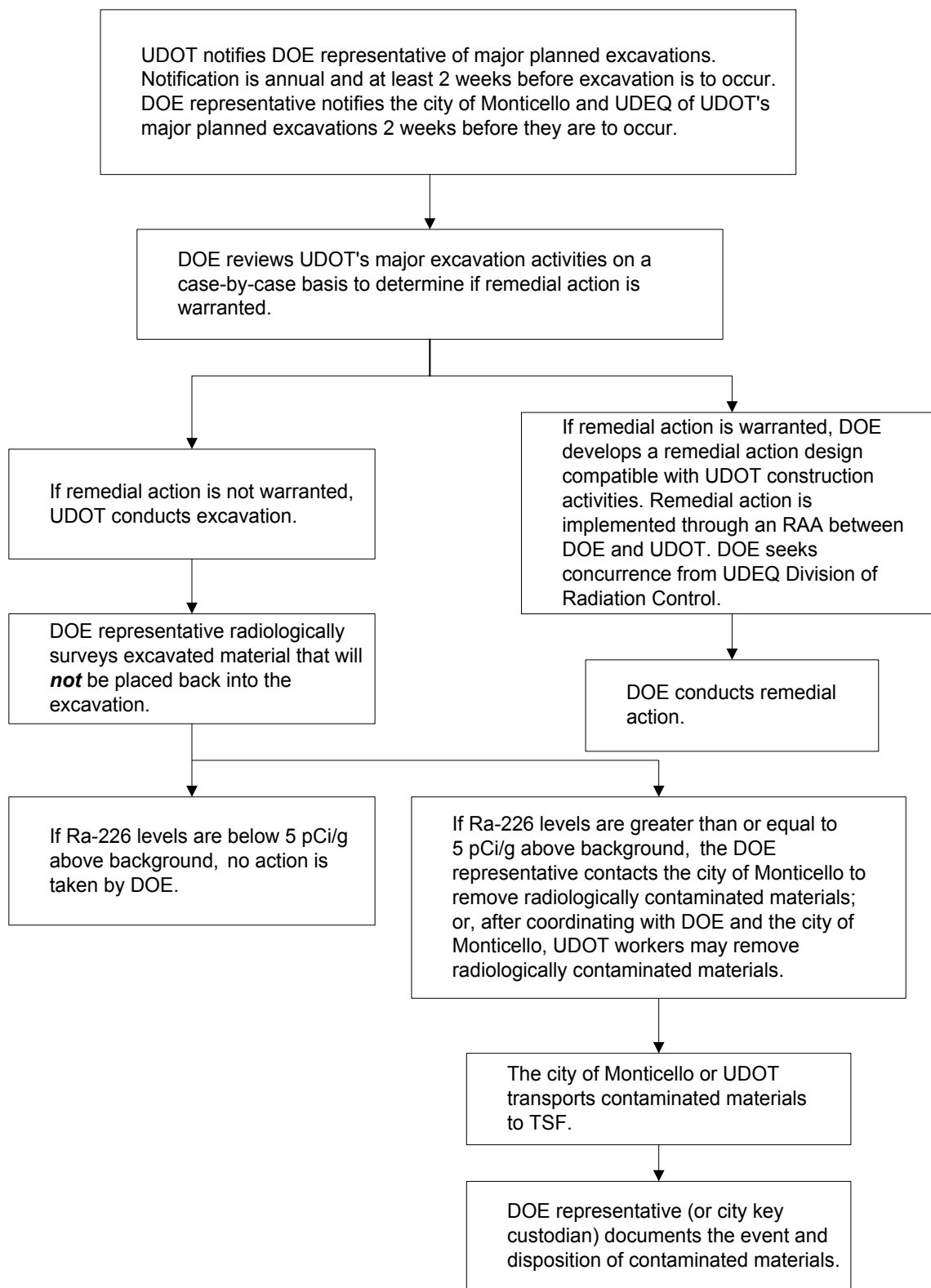


Figure BB1. Contingency Actions for Major Planned Excavations

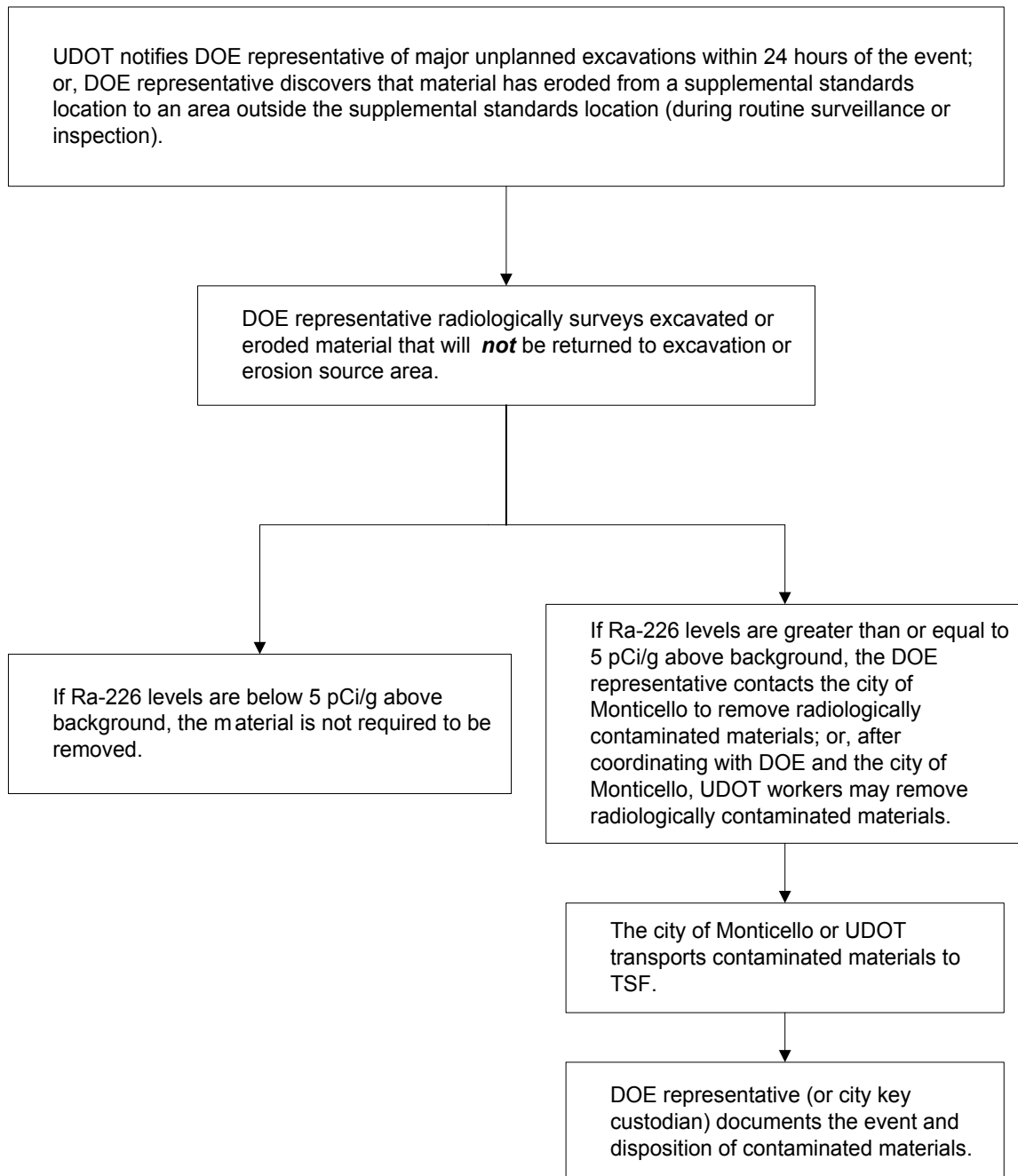


Figure B2. Contingency Actions for Major Unplanned Excavations or Erosional Events

B.7.3 Minor Planned and Unplanned Excavations

UDOT is responsible for notifying DOE of minor planned excavations a minimum of 1 day before they are conducted and for notifying DOE of minor unplanned excavations within 24 hours of the event. In either situation, the DOE representative will arrive at the excavation site as soon as practical to radiologically survey the material that will not be returned to the excavation. If the surface cleanup standard is not exceeded, the material will not be required to be removed. If the surface cleanup standard is exceeded, the DOE representative will contact the city of Monticello to remove the radiologically contaminated material and transport it to the TSF. Alternatively, UDOT may remove and transport radiologically contaminated materials after coordinating with DOE and the city of Monticello. Sections B.7.4 through B.7.10 describe the procedures that will be followed for surveying, removing, transporting, and disposing of the materials. Figure BB3 summarizes the contingency actions that will be taken during minor excavations.

B.7.4 Radiological Surveys

To conduct a radiological survey, the DOE representative will measure gross gamma levels with a gamma scintillometer (e.g., an Eberline EB600 multi-purpose instrument attached to a sodium iodide detector). At all excavation sitesC major, minor, planned, and unplannedC the DOE representative will survey only the material that will **not** be returned to the excavation. Areas of soil with Ra-226 concentrations greater than 5 pCi/g above background will be considered radiologically contaminated, identified for removal, and disposed of at the TSF. A gamma instrument reading of 30 percent or more above background will require additional measurements with a delta scintillometer to determine if the Ra-226 concentration is 5 pCi/g or more above background. Details of this survey procedure and instrument operation are included in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

DOE does not anticipate encountering suspect hazardous substances during excavation of highway rights-of-way. Site assessments and inspections during remediation of adjacent contaminated properties indicate that hazardous substances other than radiologically contaminated material are rare or nonexistent. During the radiological survey of excavated material, the DOE representative will, however, inspect the material for suspect hazardous substances using the recognition criteria described in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*. In the unlikely event that a suspected hazardous substance is determined to be mixed with radiologically contaminated material, the DOE representative will isolate the material and make arrangements for qualified personnel to characterize and manage the material. The material will not be transported until risks and management requirements associated with the specific type of material are identified. The DOE representative will **not** take responsibility for a suspect hazardous substance if it is not radiologically contaminated, unless it is attributable to millsite or DOE operations.

B.7.5 Radiological Site Controls

The *Monticello Projects Health and Safety Plan* (DOE 1997) presently does not require occupational radiological controls during remediation of areas containing less than 140 pCi/g of

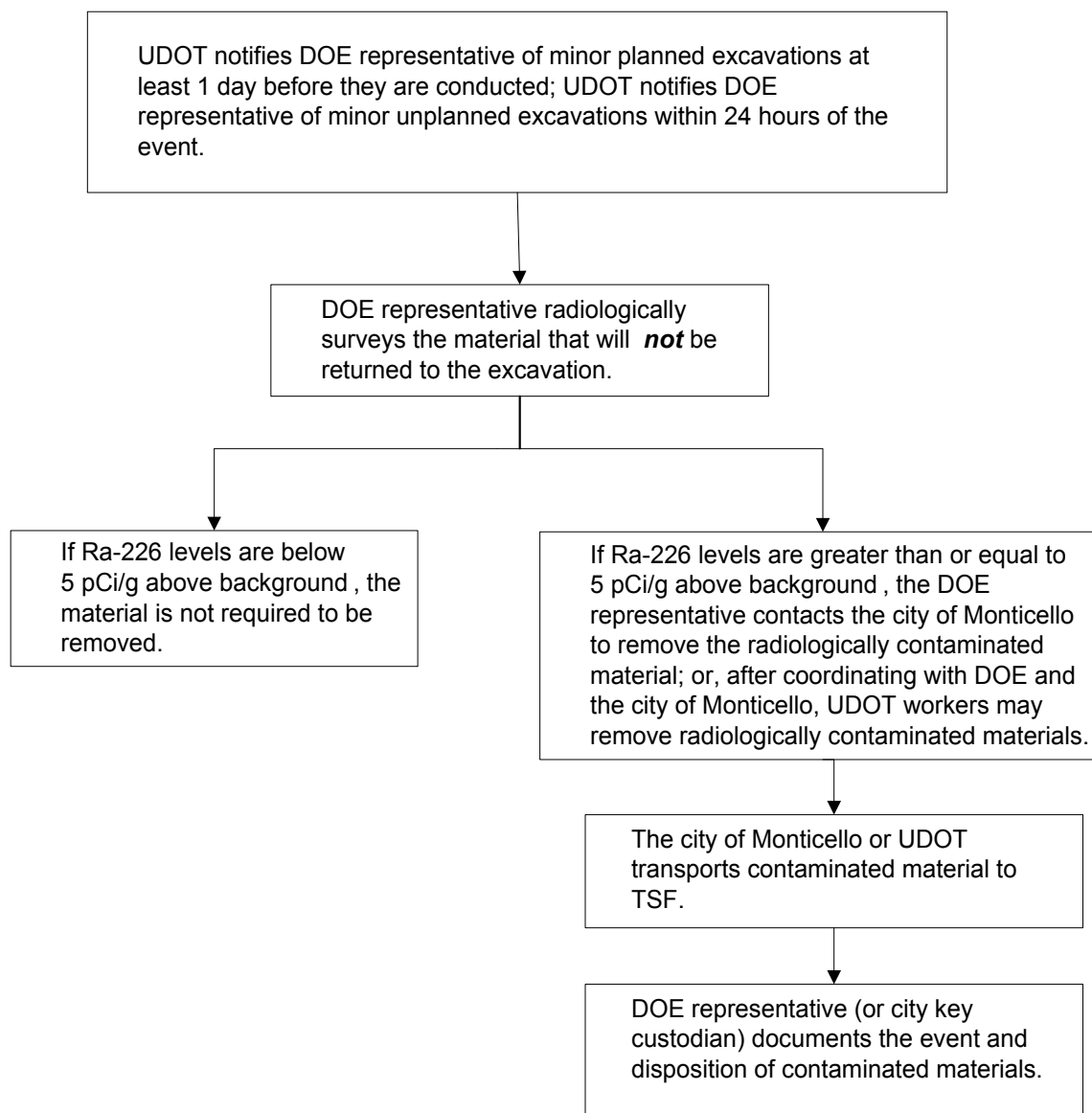


Figure BB3. Contingency Actions for Minor Planned and Unplanned Excavations

Ra-226, mainly because residual radioactive materials from ore processing with Ra-226 concentrations below 140 pCi/g do not constitute an occupational health hazard. The U.S. Department of Transportation (DOT) defines radioactive materials above 70 becquerels per gram total activity (equivalent to 130 pCi/g Ra-226) as a hazardous commodity and does not regulate radioactive materials below this concentration. DOE will take a conservative approach and will implement radiological site controls when radiologically contaminated materials in excess of 130 pCi/g of Ra-226 are found. However, no radiological site controls will be implemented when Ra-226 concentrations are below 130 pCi/g; that is, there will be no requirements for frisking, personal protective equipment, equipment decontamination, medical surveillance, access control, or posting at excavation sites. As a good housekeeping practice, the bed of the truck used to transport radiologically contaminated material will be shoveled or swept clean of visible solid material after each use.

DOE believes that the majority of the radiologically contaminated materials found during LTSM will be less than 130 pCi/g of Ra-226, mainly because radiological assessment data indicate that concentrations on the supplemental standards properties are well below 130 pCi/g. Verification and field assessment data on adjacent contaminated properties also indicate that concentrations above 130 pCi/g are rare or nonexistent.

In the unlikely event that radiologically contaminated materials in excess of 130 pCi/g of Ra-226 are found, the DOE representative will implement proper radiological controls (e.g., donning personal protective equipment, posting, frisking, decontaminating). Only workers who have completed Radiological Worker II Training will be allowed to enter the contaminated area. Procedures for removing and transporting radiologically contaminated materials in excess of 130 pCi/g of Ra-226 are detailed in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

B.7.6 Reportable Quantity Releases

DOE does not anticipate that reportable quantities, as defined under 40 CFR 302, “Designation, Reportable Quantities, and Notification,” will ever be released from the highway rights-of-way. Given the radiological activity of contaminated materials left in place on the properties (see Section 3.2, “Radiological Assessment,” of the Supplemental Standards Application), a worst-case release would be associated with Ra-226 concentrations of 50.5 pCi/g. A minimum of 385 cubic yards (yd³) (about 39 dump-truck loads) of this material would have to be released before the reportable quantity of 0.052 curie (for natural uranium in equilibrium with its daughters) was exceeded. Under an even more unlikely scenario involving a release of contaminated materials associated with Ra-226 concentrations of 130 pCi/g, more than 140 yd³ (about 14 dump-truck loads) of contaminated materials would have to be released before the reportable quantity limit was exceeded. Therefore, DOE does not anticipate a need to notify EPA or UDEQ concerning reportable quantity releases of radiologically contaminated materials. If a reportable quantity should ever be released, however, DOE will make a notification in accordance with 40 CFR 302.

B.7.7 Training

To remove and transport radiologically contaminated materials having Ra-226 concentrations less than 130 pCi/g, UDOT workers will need to complete LTSM Training, which describes the procedures that should be followed to maintain compliance with this LTSM Plan, and General

Radiological Training, which describes the fundamental hazards associated with radiological materials. If contaminated materials in excess of 130 pCi/g of Ra-226 are found, properly trained city of Monticello workers will remove and transport these materials. These workers will be required to complete the following training:

- ~ LTSM Training;
- ~ Radiological Worker II Training and annual refreshers;
- ~ DOT Exemption Training for Colorado and Utah; and
- ~ Hazardous Materials Transportation Training, Modules 1, 2, 10, and 15.

To access the TSF, UDOT and city of Monticello workers must have completed LTSM Training and either General Radiological Training or Radiological Worker II Training.

DOE will provide this training to UDOT and city of Monticello workers who may be involved in excavation and transportation activities.

The DOE representative will be required to complete, at a minimum, the following training:

- Radiological Control Technician Training
- Source Handler Training.
- Radiological Worker II Training and annual refreshers.
- LTSM Training.
- DOT Exemption Training for Colorado and Utah.
- Hazardous Materials Transportation Training, Modules 1, 2, 10, and 15.
- Respirator Wearer Training.
- Delta and Gamma Scintillometer Training.
- Photo Ionization Detector Training.

B.7.8 Transportation of Radiologically Contaminated Materials

Radiologically contaminated materials will be transported from the highway rights-of-way in accordance with applicable regulations, including (but not limited to) DOT regulations and the requirements imposed by the Utah State Highway Patrol Office. In the event of a spill or other release of contaminated material to the environment, the transporter will follow the procedures for spill response outlined in Section B.7.9. To help prevent spills, the transporter will meet the following requirements for transporting contaminated material.

- Dump trucks will be equipped with end-dump tailgate “diapers,” which will be constructed of at least a 6-mil plastic (or equivalent) and will not allow soil or liquid leakage. The tailgate diaper will extend horizontally a minimum of 4 feet onto the floor of the dump bed, up the inside of the tailgate, and hang vertically a minimum of 12 inches over the outside of the tailgate. It also will cover the vertical edges of the tailgate and the horizontal edges of the floor of the dump bed by a minimum of 4 feet. The diaper will not interfere with the visibility of the tail lights, turn signals, or license plate.

- Radiologically contaminated materials will be transported with a bed cover (canvas or equal) over the loaded truck bed that will overlap the truck-bed sides, front, and back by a minimum of 6 inches. The truck will be equipped with a mechanical tarping device so that the person tarping the truck does so remotely or from the ground and is not required to climb onto or into the truck bed to cover the load.
- All radiologically contaminated material removed from a given area will be transported directly to the TSF. Contaminated material will not be transported to or deposited at any other location. Interim storage of the material, either in or outside of the conveyance vehicle, will not be permitted outside of the supplemental standards properties.
- Reduced loads (# 50 percent of normal capacity) will be hauled when the contaminated material is saturated and could result in a flowable condition inside the truck bed.
- Trucks used to haul contaminated materials will carry one orange vest and two emergency triangles meeting DOT requirements. These items will be used in the event of a spill (see Section B.7.9).
- Truck CertificationC Trucks used to haul contaminated materials will have current DOT or Commercial Vehicle Safety Association certification of inspection. Proof of these certifications (normally in the form of a windshield sticker) will be required prior to the performance of work.
- Truck Maintenance ProgramC Trucks used to haul contaminated materials will be maintained in a condition that will avoid spillage. Operating levers controlling hoisting or dumping devices on haulage bodies will be equipped with a latch or other device that will prevent accidental starting or tripping of the mechanism. Tailgates will fit snugly against the dump bodies. Tailgate latching mechanisms will have a secondary back-up system (i.e., the primary latch actuator mechanism will be backed up with a mechanical “cam-over” system that is adjusted to fail positively in the event of a primary latch actuator malfunction; or, the latching mechanism will have an equivalent, acceptable mechanical locking system). All mechanisms will be maintained in proper working order so that the tailgate is securely latched when in a closed position. Worn, damaged, or weakened parts will be replaced with new components that match the original equipment. An inspection and maintenance log, which may be reviewed at any time by DOE, will be kept in the vehicle.
- Maintenance Inspection and Testing ProgramC Trucks used to haul contaminated materials will be inspected and tested at the beginning of each day that they are used. The truck driver will ensure that tailgates, latching mechanisms, and hoisting/dumping devices operate properly.

B.7.9 Spill Response

DOT regulations do not require preparation of a spill response plan for unregulated materials. As a best management practice, however, the transporter will follow certain procedures in the event of a contaminated material spill. The truck driver will stop the truck and try to secure the leak. The driver will then (1) don an orange vest; (2) place one emergency triangle in front of the truck; (3) place one emergency triangle behind the truck; and (4) notify his/her immediate

supervisor and the DOE representative. The supervisor of the truck driver will also notify the DOE representative to ensure that DOE is aware of the spill. The DOE representative will determine the extent of the spill (with radiological instrumentation, if needed) and will then require the city of Monticello or UDOT to recover the spilled material and transport it to the TSF. DOE will ensure that spills are properly managed.

The DOE representative will report the spill to the LTSM Program Manager and will document the spill on the DOEBGJO Incident Report form (GJO 1743). After an investigation into the cause of the spill, the DOE representative will recommend methods for avoiding spills in the future and relay this information to the responsible parties. Spills will be reported in the annual inspection reports.

B.7.10 Temporary Storage Facility

DOE will construct a TSF either near the Monticello repository site or the Monticello Millsite to allow for future management of radiologically contaminated materials generated during LTSM activities. Because the TSF will be owned and managed by DOE, it will be operated in accordance with 10 CFR 835, "Occupational Radiation Protection." The TSF will consist of several features, including six 13-yd/roll-off bins for storing radiologically contaminated materials containing Ra-226 concentrations less than 130 pCi/g and unsurveyed materials; a Drum Storage Area for storing radiologically contaminated material containing Ra-226 concentrations greater than 130 pCi/g, and a Hazardous Substance Area, for temporarily storing radiologically contaminated material that is mixed with a hazardous substance (Figure BB4). If larger quantities of material containing Ra-226 concentrations greater than 130 pCi/g are found, then the roll-off bins will be used.

TSF Radiological Controls

Access: Access will be controlled by a wildlife fence and a locked gate. Only the DOE representative and a representative from the city of Monticello will have access to the gate key. The key custodian who unlocks the gate will record the following information in the TSF Record Book each time material is brought to the TSF:

- ~ Date
- ~ Time
- ~ Name of driver
- ~ Origin of material being placed in the TSF
- ~ Type of material (i.e. <130 pCi/g, >130 pCi/g, hazardous/unknown)
- ~ Estimated cubic yardage of material being placed in the TSF
- ~ If unsurveyed material is brought to the TSF in an emergency situation, a notation that the DOE representative needs to determine if the material is radiologically contaminated and conduct an inspection for suspect hazardous substances at the TSF.

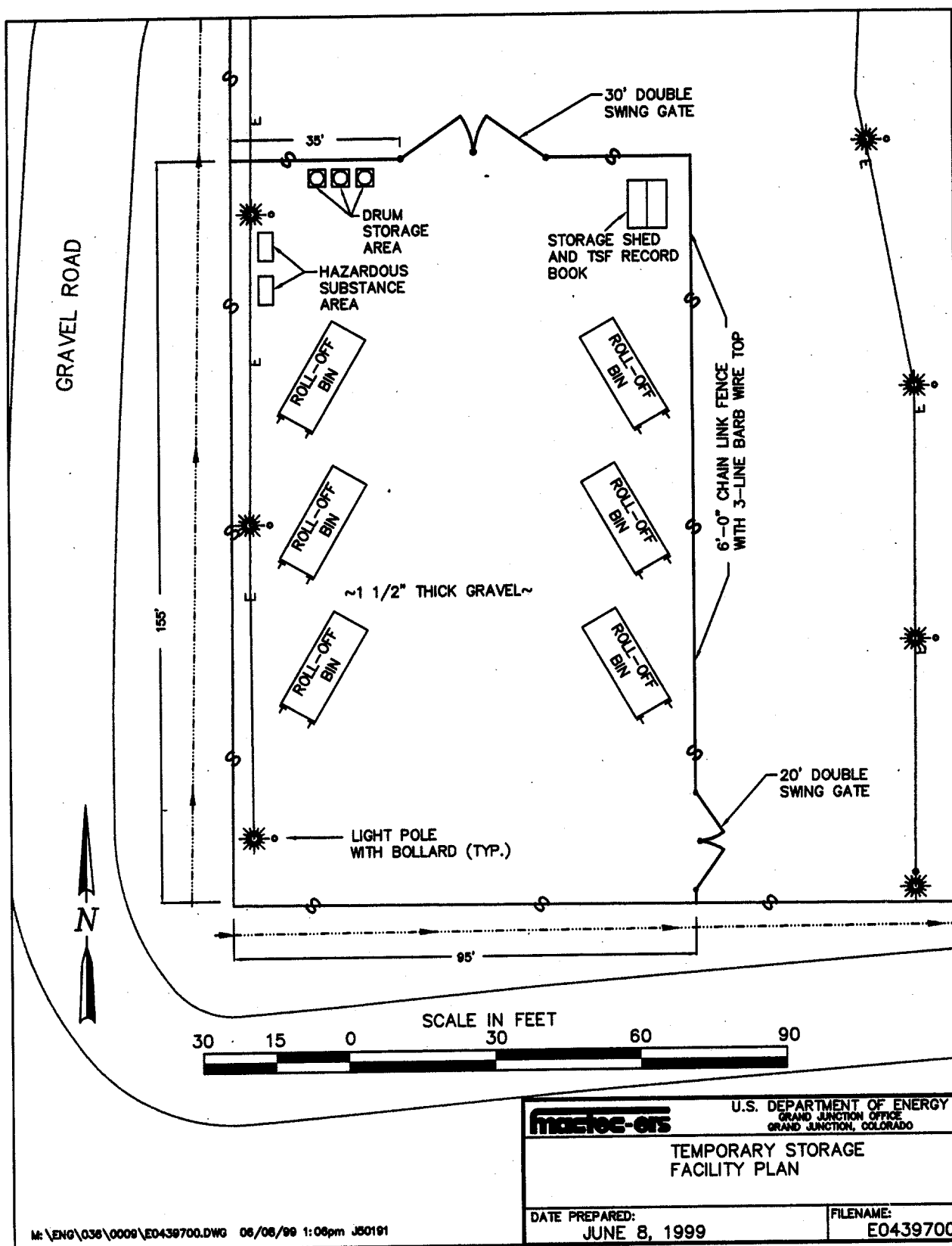


Figure B-4. Temporary Storage Facility Conceptual Plan

Only the DOE representative and authorized UDOT and city of Monticello workers (those who have completed the training outlined in Section B.7.7) will be allowed access to the TSF. All other persons must be escorted by the DOE representative.

Posting: Controlled Area signage, as defined by the *Grand Junction Office Site Radiological Control Manual* (MACTECBERS and WASTRENBGJ Manual GJO 3), will be posted along the TSF fence and gate. A sign stating “Low-Level Radioactive Soil: This receptacle (or area) contains soil and materials contaminated with uranium ore and mill tailings; radioactivity concentrations exceed the environmental cleanup levels specified in 40 CFR 192” will be posted and on each container in use in the TSF. Radioactive Material Area signage will be posted in the Drum Storage Area (or on a roll-off bin) when materials exceeding 130 pCi/g of Ra-226 are stored there.

Training: Because the entire TSF will be managed as a Controlled Area, personnel entering the TSF will be required to have completed General Radiological (or Radiological Worker II Training) and LTSM Training or will be escorted by the DOE representative.

Decontamination: When radiologically contaminated materials having Ra-226 concentrations less than 130 pCi/g are transported to the TSF, the bed of the truck will be shoveled or swept clean of visible solid material after each use. For contaminated materials in excess of 130 pCi/g of Ra-226, equipment will be decontaminated in accordance with the DOE representative’s directives.

Secondary Containment: The slope of the facility will be such that precipitation and snow melt will drain out of the area. The metal roll-off bins and the drums containing material exceeding 130 pCi/g of Ra-226 will be lined with 6-mil-thick plastic. Hazardous substance containers will be managed in accordance with a plan developed for the specific type of hazardous substance present. Development of this plan is discussed in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

TSF Operations

Radiologically contaminated materials will be brought to the TSF by UDOT or city workers. Materials having Ra-226 concentrations less than 130 pCi/g will be dumped directly into a roll-off bin, and the bin will be tarped; materials having Ra-226 concentrations in excess of 130 pCi/g will be placed in a container in the Drum Storage Area. If quantities are more than can be stored in the drums, then a roll-off bin will be used.

For permanent disposal, DOE will ship radiologically contaminated materials to an appropriately licensed facility (e.g., the Cheney Disposal Cell near Whitewater, Colorado, which is owned and operated by DOE). DOE will make shipments when the roll-off bins or Drum Storage Area reach 75-percent capacity. Shipping will be conducted in accordance with applicable DOT regulations. DOE’s current DOTBE01594 Exemption Permit will be updated to reflect hauling to the final disposal location.

DOE will be responsible for maintaining year round access to and at the TSF. This will be accomplished by either using city workforce or a local contractor or a combination of the two.

Inspections

As a best management practice, quarterly inspections of the TSF will be conducted. These inspections will include:

1. Evaluation of the condition of containers,
2. Evaluation of the condition of labels and postings, and
3. Evaluation of the condition of fence.

If any replacement or repairs are necessary, it will be documented on the inspection form. The next inspection will reflect actual repairs made. These forms will be filed in chronological order in the TSF record book.

B.8 CERCLA 5-Year Reviews

DOE will prepare and submit to EPA a report fulfilling the requirements of a Level I Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) 5-year review every 5 years as long as radiologically contaminated materials remain on site above EPA standards (40 CFR 192) or until EPA no longer requires the submission of such a report. The purpose of the report will be to evaluate whether the “response action” (i.e., leaving radiologically contaminated materials in place on the supplemental standards properties and implementing contingency actions when contaminated materials are disturbed) remains protective of public health and the environment. In addition, DOE will evaluate whether its LTSM activities are conducted at an appropriate level of effort to ensure protection of public health and the environment. The CERCLA 5-Year Review Report will be available for public review at DOEBGJO and the DOE representative’s Monticello office. In accordance with EPA guidance (EPA 1991, EPA 1994), the report will include the following general information.

- I. Background
 - A. Introduction
 1. Name of site
 2. Reason for 5-year review
 3. Level of 5-year review
 4. Summary results
 5. Community relations activities
 - B. Site History
 1. Location
 2. Nature of hazards
 - C. Remedial Objectives
 1. Remedy selected
 2. ARARs
 3. Remedial action conducted
- II. Site Conditions
 - A. Summary of 5-year review
 1. Scope
 2. Level of review

- B. Review Results
 - 1. Data review
 - 2. Site visit
 - 3. Monitoring results
 - 4. Areas of noncompliance
- III. Recommendations
 - A. Statement of protectiveness
 - B. Recommended activities
 - C. Implementation requirements
 - D. Next review
- IV. Signature Block

B.9 Records

DOE will maintain a permanent file at the DOEBGJO office in Grand Junction, Colorado, that will contain information and data associated with the supplemental standards properties. Information in the file will be available for review by EPA, UDEQ, and the public. Complete and accurate reports concerning supplemental standards surveillance, maintenance, and inspection activities will be maintained in accordance with the procedures in 41 CFR Section 101.11, "Archives, Records, and Records Management," the DOEBGJO contractor's *General Management Procedures* (MACTECBERS Manual MACB1000) and the GJO LTSM working file index. DOE also will keep a duplicate of the permanent file at Monticello for local reference and use. The permanent file for the supplemental standards properties will include the following:

- The LTSM plans for supplemental standards properties.
- Applications for all supplemental standards properties.
- Legal descriptions and maps of supplemental standards properties.
- Legal documentation of DOE's agreements, including copies of cooperative agreements for financial assistance, MOUs, deed annotations, and relevant RAAs.
- Final construction designs for properties where partial remediation occurred.
- Pertinent design and construction documents and drawings.
- Radiological as-built drawings, where relevant.
- Site atlas (vicinity, topographic, and base maps).
- Baseline and aerial photographs.
- Routine surveillance reports.
- Annual inspection reports and records.

- CERCLA 5-Year Review Reports.
- Follow-up or contingency inspection reports; preliminary assessments, reports, and records.
- Custodial maintenance or repair reports and records.
- Corrective action plans, reports, and records.
- Quality Assurance Program Plan.
- Shipping records.

The permanent DOEBGJO and Monticello site files will be updated as necessary after completion of the annual site inspections.

B.10 Health and Safety

Health and safety plans are required by 29 CFR 1910.120, “Hazardous Waste Operations and Emergency Response,” for use at uncontrolled hazardous waste sites. Because health risks associated with the potential activities at the highway rights-of-way have been analyzed and found to be acceptable (see Health Risk Assessments) and because the disposition of contaminated materials will have been approved (upon approval of this application), the activities associated with this LTSM plan will not fall within the scope of 29 CFR 1910.120. Thus, a project health and safety plan will not be prepared for these LTSM activities. Certain procedures and requirements normally associated with a health and safety plan, such as site control, spill response, training requirements, and transportation procedures, are specified for LTSM activities in Section B.7, “Contingency Action Plan,” of this document.

B.11 Quality Assurance

The *Long-Term Surveillance and Maintenance Program Quality Assurance Program Plan* (QAPP) (DOE 1996), which covers all LTSM Program sites assigned to DOEBGJO, will govern the activities associated with LTSM activities on the highway rights-of-way. The QAPP specifies requirements for:

- ~ Program planning.
- ~ Program activities, including inspections, site maintenance, corrective actions, and emergency responses.
- ~ Record-keeping and preservation of records.
- ~ Surveillance and audits of program compliance with quality assurance requirements.

Project-level quality control requirements will be specified in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

B.12 Procedures for Revising and Updating the LTSM Plan

This LTSM Plan may be revised, updated, or renewed upon concurrence of EPA and UDEQ. Portions of the document may be terminated by mutual written agreement of the parties, or by either party, upon 30-day notice to the other party(ies) and upon concurrence of EPA and UDEQ. EPA and UDEQ reviews will be conducted in accordance with the provisions of the *Monticello Site Federal Facility Agreement* (FFA) (DOE 1988b). DOE will not be relieved from continuing obligations under CERCLA, even if all involved parties agree to invalidate this LTSM Plan.

B.13 Reservation of Rights

Nothing in this document will be construed to abridge the rights of the parties under CERCLA, the FFA negotiated in 1988, or other applicable Federal and State laws.

References

MACTECBERS. Manual MACB1000, *General Administrative Procedures*, Grand Junction, Colorado.

MACTECBERS and WASTRENBGJ. Manual GJO 3, *Grand Junction Office Site Radiological Control Manual*, Grand Junction, Colorado.

U.S. Code of Federal Regulations

Title 10, "Energy"

Title 29, "Labor"

Title 40, "Protection of Environment"

Title 41, "Public Contracts and Property Management"

U.S. Department of Energy, 1988a. Direction from John E. Baublitz, Acting Director, Office of Remedial Action and Waste Technology, Office of Nuclear Energy, Washington, D.C. to Don Ofte, Manager, Idaho Operations Office, November 30.

CCC, 1988b. *Monticello Site Federal Facility Agreement*, U.S. Environmental Protection Agency Region VIII, State of Utah Department of Health, and U.S. Department of Energy, agreement pursuant to Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, effective February 24, 1989.

_____, 1996. *Long-Term Surveillance and Maintenance Program Quality Assurance Program Plan*, MACB2152, Revision 0, prepared by MACTECBERS for U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, December.

_____, 1997. *Monticello Projects Health and Safety Plan*, MACBMRAP 1.3.4, prepared by MACTECBERS for U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, June.

U.S. Department of Transportation, 1996. *Exemption Number DOT-E 10594 (PTE), 3rd Revision* (September 3, 1996), authorized on October 11, 1996; on file at MACTECBERS, Grand Junction, Colorado.

U.S. Environmental Protection Agency, 1991. *Structure and Components of Five-Year Reviews*, OSWER Directive 9355.7B02, Office of Solid Waste and Emergency Response, Hazardous Site Control Division, Washington, D.C., May 23.

_____, 1994. *Supplemental Five-Year Review Guidance*, OSWER Directive 9355.7B02A, Office of Solid Waste and Emergency Response, Hazardous Site Control Division, Washington, D.C., July 26.

This page intentionally blank

Attachment B–1

**Outline for *LTSM Operating Procedures for
Monticello Supplemental Standards Locations***

This page intentionally blank

Outline for LTSM Operating Procedures for Monticello Supplemental Standards Locations

Glossary

- 1.0 Manual Overview
 - 1.1 Background
 - general overview; reference LTSM Plan, which is an appendix
 - 1.2 Responsibilities and Authorities
 - identify personnel, agencies, and contacts and describe general responsibilities and authorities
 - establish the DOE representative's work schedule and need for availability
 - establish turnover procedures when work is transferred to support personnel
- 2.0 Routine Surveillances
 - 2.1 Responsible Party
 - 2.2 Surveillance Routine—describe for each supplemental standard property
 - 2.3 Types of Surveillance Observations
- 3.0 Recording Observations
 - 3.1 Record Book Entries
 - how
 - what
 - when
 - 3.2 Photographic Records
 - how
 - what
 - when
- 4.0 Annual Inspections
 - 4.1 Responsible Party
 - 4.2 Inspection Routine—describe for each supplemental standard property
 - 4.3 Types of Inspection Observations—refer to checklists in LTSM Plan
 - 4.4 Requirements for Recording Observations
- 5.0 Reports
 - 5.1 Annual Inspection Report
 - define content, distribution, and responsible party
 - 5.2 CERCLA 5-Year Reviews
 - define content, distribution, and responsible party
- 6.0 Records Management
 - 6.1 Definition and Types of Records—working file index will be in appendix
 - 6.2 Record Distribution and Filing Requirements
 - 6.3 Responsible Parties

- 7.0 Radiological Surveys
 - 7.1 Responsible Party
 - 7.2 Procedures for Determining Extent of Contamination
 - 7.3 Comparison of Readings to Cleanup Standards
 - 7.4 Calibration and Use of the Eberline E-600 Ratemeter
 - 7.5 Calibration and Use of the EL-0018B Delta Scintillometer
 - 7.6 Procedures for Assessing Potentially Contaminated Soils in Roll-Off Bins
- 8.0 Suspect Hazardous Substances
 - 8.1 Identification and Determination of Suspect Hazardous Substances
 - 8.2 Removal and Containerization
 - 8.3 Decontamination of Equipment
 - 8.4 Health and Safety
 - 8.5 Transportation
 - 8.6 Management
- 9.0 Radiologically Contaminated Materials in Excess of 130 pCi/g of Ra-226
 - 9.1 Removal and Containerization
 - 9.2 Decontamination of Equipment
 - 9.3 Health and Safety
 - 9.4 Transportation
 - 9.5 Management
- 10.0 Transportation of Radiologically Contaminated Material
 - 10.1 Requirements of DOT Exemption (attach exemption)
 - 10.2 Maintenance Inspection for Equipment
 - 10.3 Spill Prevention Plan
- 11.0 Management of the Temporary Storage Facility
 - 11.1 Attach appropriate procedures from the Radiation Protection Program Plan and the Site Specific Radiological Controls Manual
 - 11.2 Maintenance Inspection for Equipment
- 12.0 Quality Control Requirements
- 13.0 Change Control Process
 - 13.1 Change Levels and Notification Requirements
 - 13.2 Page Change Procedure

Attachment B-2

**Preliminary Inspection Checklist
Annual Site Inspection**

This page intentionally blank

Preliminary Inspection Checklist

Annual Site Inspection

Site: Highways 191 and 666 Rights-of-Way

Date Prepared:

Date of Last Inspection:

Type of Inspection: Annual Inspection

Date of Next Inspection:

I. Preparation for the Inspection

- A. Review the *LTSM Plan for Highways 191 and 666 Rights-of-Way*.
- B. Review the surveillance records associated with the site.
- C. Review the Cooperative Agreement between UDOT and DOE
- D. Review previous inspection reports, field notes from previous inspections, maps and photographs of the site, and other documents as necessary to become familiar with site history, current conditions at the site, and results of recent maintenance.
- E. Review site access procedures and protocols. Notify the on-site DOE representative and the DOE Project Manager (Mr. Joel Berwick, 970 248-6328).
- F. Review specific observations to be made and problems to be studied or resolved during the inspection.

II. Site Inspection

The inspection team will investigate the following features

- Erosional features on highway rights-of-way
- Change in land use on highway rights-of-way
- Unauthorized excavation activities

This page intentionally blank

Appendix C

Piñon/Juniper Properties Long-Term Surveillance and Maintenance Plan

Note: This appendix is excerpted from Appendix E of *Application for Supplemental Standards—Piñon/Juniper Properties*, May 1999 (Document Number E0387004). With the exception of the headers, footers, and numbering system, the wording in this appendix is identical to Appendix E of the original document. This appendix is provided to demonstrate continuity with the plans developed at the time of application for supplemental standards. Updated changes to the administration and quality assurance of the LTSM program are provided in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual*.

LTSM Checklist for MSB00176BVL

The Monticello LTSM Representative shall:

1. Inspect the publicly accessible perimeters of the property once a month for evidence of material eroding from the property and for the construction of unauthorized habitable structures on the property (see Section 2.5).
2. Inspect the publicly accessible perimeters of the property after storm events that produce 2.8 inches or more of rain within a 24-hour period. With the property owner's consent, inspect the property to determine if soil material has eroded off the property (see Section 2.5).
3. If soil movement or erosion is observed in areas adjacent to the property or on the publicly accessible perimeters, conduct a radiological survey of the soil (see Sections 2.5 and 3.0).
4. If the property owner wishes to build a habitable structure on the property, conduct a radiological survey of the excavated footprint and spoils pile (see Sections 2.5 and 3.0).
5. When conducting radiological surveys, check for suspect hazardous substances (see Section 5.0).
6. Handle and transport radiologically contaminated materials to the TSF in accordance with Section 4.0 of this manual and Volume I, *Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite*, (DOE 2001b) Sections 6.0 and 7.0.
7. Record notes and observations in the MSB00176BVL Record Book (see *Long-Term Surveillance and Maintenance Administrative Manual* [DOE 2001a], Section 9.0).
8. On an annual basis in May, determine if property ownership or habitation has changed and if so, inform the new owner and/or inhabitant of the land use restrictions associated with the property. Check with the city building department to see if a building permit has been issued or if re-zoning has been attempted.

LTSM Checklist for Government-Owned Piñon/Juniper Properties

The Monticello LTSM Representative shall:

1. On a quarterly basis (every 3 months), drive and walk across properties MPB00391BVL, Phase III; MPB01077BVL, Phase II; and MPB01041BVL to ensure that:
 - Habitable structures are not being built.
 - Overnight camping is not occurring.
 - Soil is not being removed from the properties (look for excavations).
 - Informational signs that inform the public of the no-camping policy are legible and in good condition.
 - The fence surrounding the properties is in good condition (see Section 2.5).
2. Record notes and observations in the Government-Owned Piñon/Juniper (P/J) Properties Record Book (see *Long-Term Surveillance and Maintenance Administrative Manual* [DOE 2001a], Section 9.0).

Contents

C.1	Administration of the LTSM Program.....	CB7
C.2	Restrictions on Land Use.....	CB8
C.2.1	Privately Owned P/J Property.....	CB8
C.2.2	Government-Owned P/J Properties.....	CB9
C.3	Passive Institutional Controls.....	CB9
C.3.1	Privately Owned P/J Property.....	CB9
C.3.2	Government-Owned P/J Properties.....	CB9
C.4	Active Institutional Controls.....	CB10
C.4.1	Privately Owned P/J Property.....	CB10
C.4.2	Government-Owned P/J Properties.....	CB10
C.5	Routine Surveillance.....	CB10
C.5.1	Privately Owned P/J Property.....	CB10
C.5.2	Government-Owned P/J Properties.....	CB11
C.6	Annual Inspections and Reports.....	CB11
C.7	Contingency Action Plan.....	CB12
C.7.1	Construction of Habitable Structures.....	CB12
C.7.2	Discovery of Eroded Material.....	CB13
C.7.3	Radiological Surveys.....	CB13
C.7.4	Radiological Site Controls.....	CB16
C.7.5	Reportable Quantity Releases.....	CB16
C.7.6	Training.....	CB17
C.7.7	Transportation of Radiologically Contaminated Materials.....	CB17
C.7.8	Spill Response.....	CB18
C.7.9	Temporary Storage Facility.....	CB19
C.8	CERCLA 5-Year Reviews.....	CB22
C.9	Records.....	CB23
C.10	Health and Safety.....	CB24
C.11	Quality Assurance.....	CB24
C.12	Procedures for Revising and Updating the LTSM Plan.....	CB25
C.13	Reservation of Rights.....	CB25
	References.....	CB25

Figures

Figure CB1.	Contingency Actions Associated with Construction of Habitable Structures ..	CB14
CB2.	Contingency Actions Associated with Discovery of Eroded Material	CB15
CB3.	Temporary Storage Facility Conceptual Plan	C-20

This page intentionally blank

Piñon and Juniper PropertiesC Supplemental Standards Application

LTSM Plan

The U.S. Department of Energy (DOE) is applying for supplemental standards on Monticello properties MSB00176BVL; MPB00391BVL, Phase III; MPB01077BVL, Phase II; and MPB01041BVL. Property MSB00176BVL is privately owned by Doug and Colleen Eldredge of 562 Eldredge Lane, Monticello, Utah; the other three properties are owned by the U.S. government. Collectively, these four properties are known as the piñon and juniper (P/J) properties.

If supplemental standards are accepted by the U.S. Environmental Protection Agency (EPA) and State of Utah Department of Environmental Quality (UDEQ) for these properties, radiologically contaminated material will remain in place, and a long-term surveillance and maintenance (LTSM) management strategy will be implemented. For the purposes of this document, ***radiologically contaminated material*** is defined as the residual radioactive material resulting from DOE-related uranium and vanadium ore processing that contains radium-226 (Ra-226) concentrations exceeding background by more than 5 picocuries per gram (pCi/g) in the surficial 15 centimeters of soil averaged over 100 square meters, or by more than 15 pCi/g in successively deeper 15-centimeter layers. These threshold values are known as the EPA cleanup standards and are promulgated by 40 CFR 192. The LTSM management strategy will include

- Implementing institutional controls (i.e. placing restrictions on land use).
- Conducting routine surveillances and inspections.
- Implementing contingency actions if radiologically contaminated materials are encountered in the future.
- Preparing reports for regulatory agencies.
- Keeping records.

Sections C.2 through C.13 define and describe these management actions.

C.1 Administration of the LTSM Program

Initially, DOE's LTSM obligations will be carried out by the project staff assigned to the ongoing remedial actions in Monticello. Within DOE Headquarters, overall responsibility and authority for Monticello activities rests with the Assistant Secretary for Environmental Management, acting through the Office of Southwestern Area Programs, Division of Off-Site Programs. Field management responsibility and authority at Monticello are delegated to the Manager of the DOE Albuquerque Operations Office, acting through the Assistant Manager for Environmental/Project Management. The authority, responsibility, and accountability for implementing and administering the Monticello projects are, in turn, delegated to the Manager of the DOE Grand Junction Office (GJO), who assigns coordination, management, and operational staff as necessary. The Office of Chief Counsel at the Albuquerque Operations Office is DOE's legal advisor. Other organizations within the Albuquerque Operations Office provide financial, procurement, and real-estate management support.

DOEBGJO was assigned responsibility for the LTSM Program on January 1, 1989 (DOE 1988a). Because the Monticello sites were once part of DOE's former Surplus Facilities Management

Project, all long-term activities at Monticello were specifically included in the scope of the LTSM Program. Upon EPA's and UDEQ's approval of the P/J properties supplemental standards applications, administrative and operational responsibilities for the properties will be implemented and administered under the existing remedial action programs. Upon completion of these programs, administration of LTSM will be transferred to the LTSM Program. Transfer is expected to occur on October 1, 2001.

When administration of the LTSM activities is transferred to the LTSM Program, the DOE/BGJO contact for actions associated with the supplemental standards properties will be a Monticello-based DOE representative, who may be a DOE employee or a contractor to DOE. The representative will reside in Monticello on a full-time basis and will be on call 24 hours a day, 7 days a week. When the representative leaves the Monticello area, he or she will ensure that backup personnel are available to perform the duties required of the representative. The contact address will be:

DOE Representative (LTSM Program)
U.S. Department of Energy
7031 South Highway 191
P.O. Box 909
Monticello, UT 84535
(435) 587B4011

DOE will be responsible for constructing a temporary storage facility (TSF) either near the Monticello repository site or the Monticello Millsite to manage radiologically contaminated materials generated under the LTSM Program. Operations at this facility are discussed in Section C.7.9.

C.2 Restrictions on Land Use

C.2.1 Privately Owned P/J Property

As part of DOE's long-term management strategy, one restriction on land use will be placed on the privately owned P/J property. This restriction, concerning the construction of **habitable structures** (i.e., structures intended for human habitation), will be enforced by placing a special zoning designation on the property (see Section C.3, Passive Institutional Controls). If the property owner wishes to build a habitable structure on the property, a special two-part building permit will need to be obtained from the Monticello Zoning Administrator. The first part of the permit will allow the property owner to excavate the footprint for the building foundation. The second part of the permit will allow construction of the structure. This second part will be issued by the Zoning Administrator **only** after the DOE representative has signed Part 1 of the permit indicating a radiological survey of the footprint and excavated spoils pile has been completed and that either the footprint area and spoils pile were not radiologically contaminated or, if radiologically contaminated material was present, the contaminated material was removed. Section C.7 provides a detailed discussion of the contingency actions to be implemented if the property owner decides to construct a habitable structure.

C.2.2 Government-Owned P/J Properties

DOE will place a restrictive easement on the three government-owned properties that will restrict land use in perpetuity. The restrictive easement will require DOE or any successor land owner to manage the properties as publicly accessible open space. The successor land owner must be a public entity, and current plans are to transfer the properties to the city of Monticello.

In addition to the restriction on the successor land owner, the restrictive easement also will not allow construction of habitable structures and will restrict public use to day-use recreation such as hiking, nature observation, and hunting. Overnight camping and removal of soil from the properties will not be allowed. Activities such as fence maintenance and construction, surveillance, firefighting, law enforcement, and emergency response will be allowed on the tract to maintain safety and to preserve the tract for its permitted land uses.

C.3 Passive Institutional Controls

C.3.1 Privately Owned P/J Property

- The Monticello Planning Commission will place a special zoning designation on the privately owned P/J property. Associated with this new zoning designation will be the restriction on land use described in Section C.2.1.
- DOE will provide a deed annotation to the San Juan County Recorder, who will annotate it to the privately owned P/J property deed. The deed annotation will contain the following statement: "This property has been remediated to an alternative cleanup level (supplemental standards), which, based on a site-specific risk assessment, is protective of human health and the environment for the current land use and property conditions." A Radiological As-Built will be attached to the deed annotation. The As-Built will include: (1) a map of the property, showing property boundaries and features; (2) a map indicating the location of remediated and radiologically contaminated areas; (3) Ra-226 concentrations in radiologically contaminated areas; and (4) a metes-and-bounds description of radiological contamination remaining on the property.

C.3.2 Government-Owned P/J Properties

- DOE will place a restrictive easement on the three properties, which will apply in perpetuity regardless of who may eventually own the land. Section C.2.2 describes the land use restrictions that will apply to the properties.
- DOE will construct a conventional four-line, barbed-wire fence around the three properties. The fence will not be intended to provide security but will be intended to permanently delineate the tract and direct traffic to a limited number of defined entry and exit points.

C.4 Active Institutional Controls

C.4.1 Privately Owned P/J Property

- If the property owner wishes to construct a habitable structure, DOE will conduct a radiological survey of the excavated footprint of the structure and of the excavated spoils pile (see Section C.7).
- On an annual basis, DOE will determine if ownership of the P/J property has changed or if new occupants reside on the property. DOE will ensure that the new owners or occupants are aware of the land-use restriction (see Section C.6).
- DOE will conduct periodic surveillances and inspections (see Sections C.5 and C.6) of the publicly accessible perimeter of the property to detect changes in land use or conditions that may affect the protectiveness of supplemental standards (such as construction of an unauthorized habitable structure or erosion of soil off the property). With the property owner's (or adjacent property owner's) concurrence, DOE may also conduct inspections after a significant (25-year or greater) storm event that would have likely caused erosional problems. [**Note:** DOE will rely on voluntary permission for access to the property to conduct these inspections.]

C.4.2 Government-Owned P/J Properties

- DOE will conduct regular surveillances and inspections (see Sections C.5 and C.6) of the properties to detect changes in land use or conditions that may affect the protectiveness of supplemental standards (such as unauthorized excavations, construction of habitable structures, or erosional problems).

C.5 Routine Surveillance

DOE will be responsible for routine surveillance of the privately owned and government-owned P/J properties. For the purposes of this document, **surveillance** means routine observations that do not require the involvement of formal inspection teams. The DOE representative will conduct surveillances of the properties to ensure that (1) the restriction on land use is enforced, (2) active institutional controls remain effective, and (3) a "presence" is created at the properties to encourage adherence to DOE's LTSM requirements. Results of the surveillances will be documented through logbook entries. Detailed procedures for completing surveillance documentation are described in the *LTSM Operating Procedures for Monticello Supplemental Standards Locations Properties*.

C.5.1 Privately Owned P/J Property

Routine surveillance of the privately owned P/J property will consist of

- A monthly drive-by inspection of the publicly accessible perimeter of the property to determine if unauthorized habitable structures have been constructed or if soil has eroded from the property.

- Periodic inspections of the publicly accessible perimeter of the property after large (25-year or greater) storm events to determine if soil has eroded from the property. With the property owner's consent, DOE may also conduct inspections on the property itself after large storm events. [**Note:** DOE will rely on voluntary permission for access to the property to conduct these inspections.] Section C.7 describes the actions that will be followed if the DOE representative discovers evidence of an erosional event.

C.5.2 Government-Owned P/J Properties

Routine surveillance of these properties will consist of quarterly inspections of land use to ensure that the requirements of the restrictive easement are being met.

C.6 Annual Inspections and Reports

DOE will conduct an annual inspection of the privately owned and government-owned P/J properties to document site conditions, land ownership, and land use. For the purposes of this document, **inspection** means review and observation by a formally constituted team for purposes of quality assurance and oversight, mobilized either at annual intervals or in response to specific concerns. Inspection team members will be provided by DOE's LTSM Program, will be qualified in their fields, and will be trained in the requirements of the supplemental standards program.

In general, the inspection team will begin each inspection with a review of the surveillance records created by the on-site DOE representative. Areas of concern or special problems will be noted and investigated. A transect along the publicly accessible perimeter of the privately owned property and several transects along the perimeters and across the government-owned properties will be walked to ensure a thorough inspection. Primarily, the inspection team will look for physical disturbances and for changes in land use. Detailed procedures for conducting annual inspections are described in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

Within 90 days after completion of the annual inspection, an inspection report will be prepared and submitted to EPA and UDEQ. An exception to this time frame will be made if the inspectors find an unsafe or hazardous condition that is related to the presence of radiologically contaminated material. If this latter situation occurs, EPA and UDEQ will be notified immediately, and the annual report will be submitted within 60 days. Annual inspection reports will be available for public review at DOEBGJO and the DOE representative's Monticello office. These annual reports, along with supporting documentation in the permanent files, will serve to (1) document the performance history of the supplemental standards properties; (2) provide DOE, EPA, and UDEQ with the information necessary to forecast future surveillance and maintenance needs; and (3) provide information to the public to demonstrate that site integrity is being maintained. The annual reports will contain the following information:

- Narrative of site inspections, results, conclusions, and recommendations.
- Summary of any spills that may have occurred during the previous year (see Section C.7.8).
- Relevant supporting documentation.

- Site inspection maps and other drawings, maps, or figures, as required.
- Inspection photographs and a photographic log sheet if new or changed conditions warrant photographic documentation.
- Recommendations for additional follow-up inspections, repair, or custodial maintenance, if required.
- Recommendations for follow-up or contingency inspection reports, if required.

C.7 Contingency Action Plan

If radiologically contaminated materials are encountered within the excavated footprint of a habitable structure, within the excavated spoils pile adjacent to the footprint, or within materials that have eroded from the privately owned P/J property, DOE will be required to take specific contingency actions. These actions and DOE's operational responsibilities are outlined in the following sections.

C.7.1 Construction of Habitable Structures

When the property owner wishes to construct a habitable structure on the privately owned P/J property, s/he will be required to obtain a special two-part building permit from the Monticello Zoning Administrator. The first part of the permit will allow the property owner to excavate a footprint for the building foundation. Once the footprint is excavated, the property owner will contact the DOE representative to conduct a radiological survey of the footprint and the excavated spoils pile. The DOE representative will respond within 48 hours of the request and will survey both areas to determine if the surface cleanup standard (5 pCi/g Ra-226 above background) is exceeded. If the standard is not exceeded in either area, DOE will sign Part 1 of the building permit, which will allow the property owner to obtain Part 2 of the building permit. Part 2 of the permit allows construction of the habitable structure.

If the cleanup standard is exceeded in any area of the footprint or spoils pile, the DOE representative will contact the city of Monticello to remove the radiologically contaminated portion and transport it to the TSF. As stated in the cooperative agreement between DOE and the city, the city will remove contaminated material within 1 week of being contacted. Radiologically contaminated materials outside the limits of the footprint excavation or spoils pile will not be removed (i.e., tailings will not be chased in a lateral direction). Sections C.7.3 through C.7.9 describe the procedures that will be followed for surveying, removing, transporting, and disposing of radiologically contaminated materials. Detailed procedures are in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

After the radiological survey is completed, the DOE representative will update a copy of the Radiological As-Built for the property. The update will identify the location of the footprint and will indicate whether the footprint area contained materials below or above the cleanup standard. Disposition of the footprint materials and spoils pile also will be recorded on the Radiological As-Built. The DOE representative will then add this new information to the Radiological As-

Built on file with the San Juan County Recorder. Figure CBI summarizes the contingency actions associated with construction of a habitable structure.

C.7.2 Discovery of Eroded Material

If during surveillance the DOE representative discovers that material has eroded from the property to an off-site location, an additional inspection could occur in accordance with paragraph C.4.1 and s/he will conduct a radiological survey of the material to determine if it exceeds the surface cleanup standard. Section C.7.3 describes the instrumentation and methods DOE will use to survey the eroded material. If the surface cleanup standard is not exceeded, the eroded material will not be removed. If the surface cleanup standard is exceeded, DOE will contact the city of Monticello to remove the radiologically contaminated material and transport it to the TSF. Sections C.7.5 through C.7.9 describe the procedures that will be followed for removing, transporting, and disposing of radiologically contaminated materials. Figure CB2 summarizes the contingency actions associated with the discovery of eroded material.

C.7.3 Radiological Surveys

To conduct a radiological survey, the DOE representative will measure gross gamma levels with a gamma scintillometer (e.g., an Eberline EB600 multi-purpose instrument attached to a sodium iodide detector). A gamma instrument reading of 30 percent or more above background will require additional measurement with a delta scintillometer to determine if the Ra-226 concentration is 5 pCi/g or more above background. Areas of soil with Ra-226 concentrations greater than 5 pCi/g above background will be considered radiologically contaminated, identified for removal, and disposed of at the TSF. Details of these survey procedures and instrument operation are included in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

DOE does not anticipate encountering suspect hazardous substances during excavation of these properties. Site assessments and inspections during remediation of adjacent contaminated properties indicate that hazardous substances other than radiologically contaminated material are rare or nonexistent. During the radiological survey of excavated material, the DOE representative will, however, inspect the material for suspect hazardous substances using the recognition criteria described in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*. In the unlikely event that a suspected hazardous substance is determined to be mixed with radiologically contaminated material, the DOE representative will isolate the material and make arrangements for qualified personnel to characterize and manage the material. The material will not be transported until risks and management requirements associated with the specific type of material are identified. The DOE representative will **not** take responsibility for a suspect hazardous substance if it is not radiologically contaminated, unless it is attributable to millsite or DOE operations.

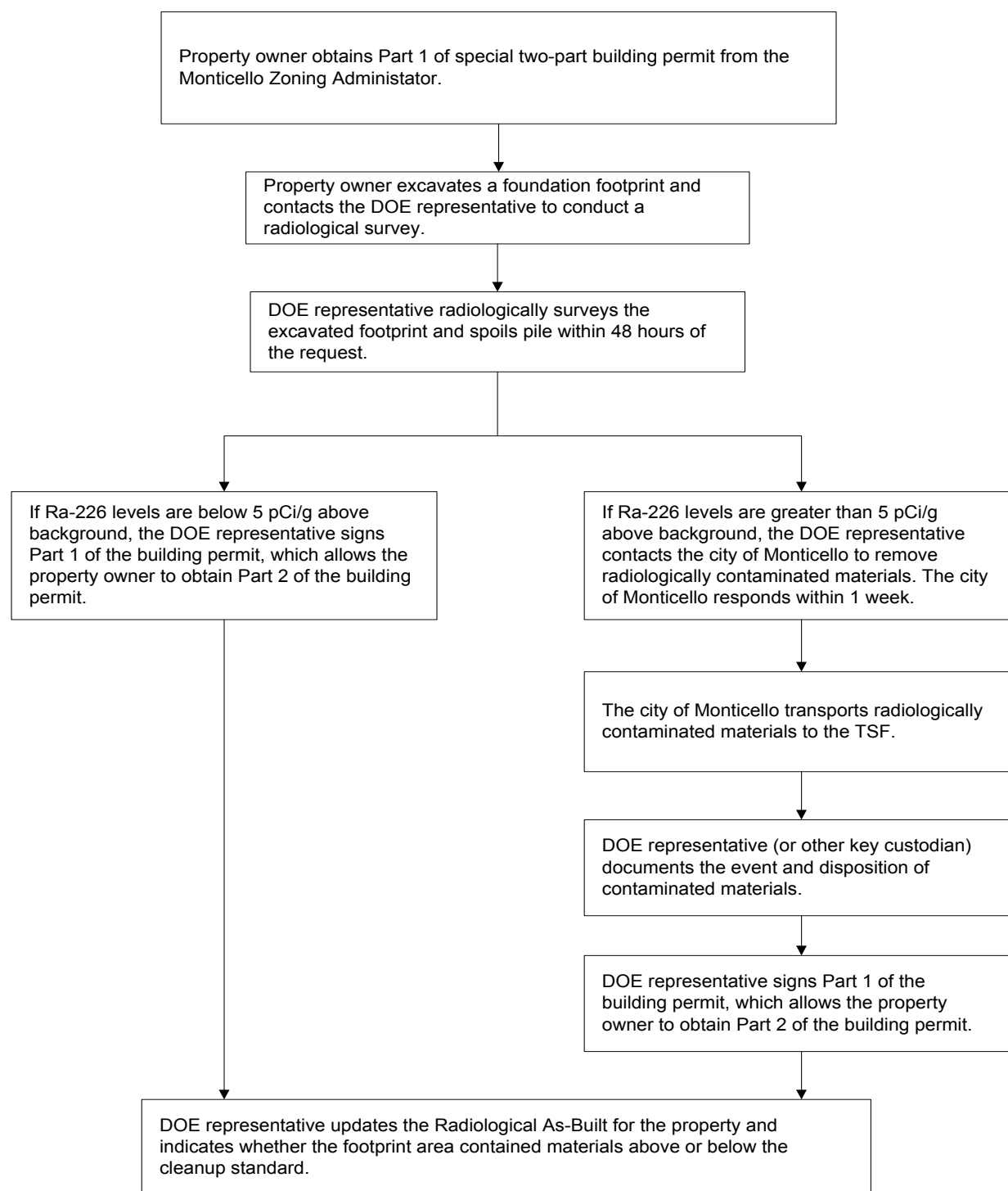


Figure C–1. Contingency Actions Associated with Construction of Habitable Structures

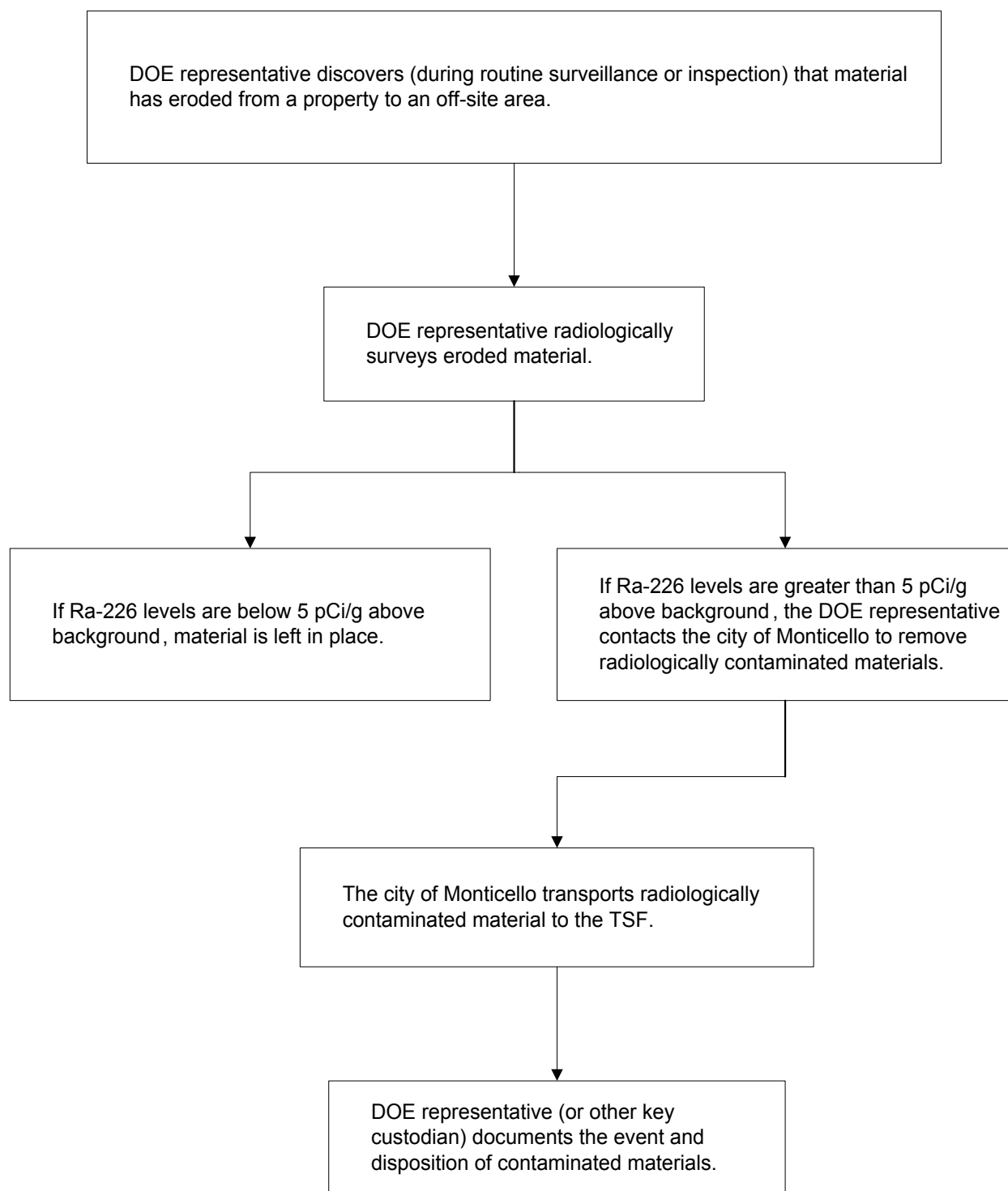


Figure C–2. Contingency Actions Associated with Discovery of Eroded Material

C.7.4 Radiological Site Controls

The *Monticello Projects Health and Safety Plan* (DOE 1997) presently does not require occupational radiological controls during remediation of areas containing less than 140 pCi/g of Ra-226, mainly because residual radioactive materials from ore processing with Ra-226 concentrations below 140 pCi/g do not constitute an occupational health hazard. The U.S. Department of Transportation (DOT) defines radioactive materials above 70 becquerels per gram total activity (equivalent to 130 pCi/g Ra-226) as a hazardous commodity and does not regulate radioactive materials below this concentration. DOE will take a conservative approach and will implement radiological site controls when radiologically contaminated materials in excess of 130 pCi/g of Ra-226 are found. However, no radiological site controls will be implemented when Ra-226 concentrations are below 130 pCi/g; that is, there will be no requirements for frisking, personal protective equipment, equipment decontamination, medical surveillance, access control, or posting at excavation sites. As a good housekeeping practice, the bed of the truck used to transport radiologically contaminated material will be shoveled or swept clean of visible solid material after each use.

DOE believes that the majority of the radiologically contaminated materials found during LTSM will be less than 130 pCi/g of Ra-226, mainly because radiological assessment data indicate that concentrations on the supplemental standards properties are well below 130 pCi/g. Verification and field assessment data on adjacent contaminated properties also indicate that concentrations above 130 pCi/g are rare or nonexistent.

In the unlikely event that radiologically contaminated materials in excess of 130 pCi/g of Ra-226 are found, the DOE representative will implement proper radiological controls (e.g., donning personal protective equipment, posting, frisking, decontaminating). Only workers who have completed Radiological Worker II Training will be allowed to enter the contamination area. Procedures for removing and transporting radiologically contaminated materials in excess of 130 pCi/g of Ra-226 are detailed in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

C.7.5 Reportable Quantity Releases

DOE does not anticipate that reportable quantities, as defined under 40 CFR 302, "Designation, Reportable Quantities, and Notification," will ever be released from the P/J properties. Given the radiological activity of contaminated materials left in place on the properties (see Section 3.2, "Radiological Assessment," of the Supplemental Standards Application), a worst-case release would be associated with a maximum Ra-226 concentrations of 16 pCi/g. A minimum of 1,200 cubic yards (yd³) (about 120 dump-truck loads) of this material would have to be released before the reportable quantity of 0.052 curie (for natural uranium in equilibrium with its daughters) was exceeded. Therefore, DOE does not anticipate a need to notify EPA or UDEQ concerning reportable quantity releases of radiologically contaminated materials. If a reportable quantity should ever be released, however, DOE will make a notification in accordance with 40 CFR 302.

C.7.6 Training

When radiologically contaminated materials having less than 130 pCi/g of Ra-226 are removed and transported, city workers will need to have completed LTSM Training, which describes the procedures that should be followed to maintain compliance with this LTSM Plan, and General Radiological Training, which describes the fundamental hazards associated with radioactive materials. To remove and transport contaminated materials in excess of 130 pCi/g of Ra-226, city workers will be required to complete the following training:

- LTSM Training;
- Radiological Worker II Training and annual refreshers;
- DOT Exemption Training for Colorado and Utah;
- Hazardous Materials Transportation Training, Modules 1, 2, 10, and 15.

To access the TSF, city workers must have completed LTSM Training and either General Radiological Training or Radiological Worker II Training.

DOE will provide this training to city workers who may be involved in excavation and transportation activities.

The DOE representative will be required to complete, at a minimum, the following training:

- Radiological Control Technician Training.
- Source Handler Training.
- Radiological Worker II Training and annual refreshers.
- LTSM Training.
- DOT Exemption Training for Colorado and Utah.
- Hazardous Materials Transportation Training, Modules 1, 2, 10, and 15.
- Respirator Wearer Training.
- Delta and Gamma Scintillometer Training.
- Photo Ionization Detector Training.

C.7.7 Transportation of Radiologically Contaminated Materials

Radiologically contaminated materials will be transported in accordance with applicable regulations, including (but not limited to) DOT regulations and the requirements imposed by the Utah State Highway Patrol Office. In the event of a spill or other release of contaminated material to the environment, the transporter will follow the procedures for spill response outlined in Section C.7.8. To help prevent spills, the transporter will meet the following requirements for transporting contaminated material.

- Dump trucks will be equipped with end-dump tailgate “diapers,” which will be constructed of at least a 6-mil plastic (or equivalent) and will not allow soil or liquid leakage. The tailgate diaper will extend horizontally a minimum of 4 feet onto the floor of the dump bed, up the inside of the tailgate, and hang vertically a minimum of 12 inches over the outside of the

tailgate. It also will cover the vertical edges of the tailgate and the horizontal edges of the floor of the dump bed by a minimum of 4 feet. The diaper will not interfere with the visibility of the tail lights, turn signals, or license plate.

- ~ Radiologically contaminated materials will be transported with a bed cover (canvas or equal) over the loaded truck bed that will overlap the truck-bed sides, front, and back by a minimum of 6 inches. The truck will be equipped with a mechanical tarping device so that the person tarping the truck does so remotely or from the ground and is not required to climb onto or into the truck bed to cover the load.
- ~ All radiologically contaminated material removed from a given area will be transported directly to the TSF. Contaminated material will not be transported to or deposited at any other location. Interim storage of the material, either in or outside of the conveyance vehicle, will not be permitted outside of the supplemental standards properties.
- ~ Reduced loads (# 50 percent of normal capacity) will be hauled when the contaminated material is saturated and could result in a flowable condition inside the truck bed.
- ~ Trucks used to haul contaminated materials will carry one orange vest and two emergency triangles meeting DOT requirements. These items will be used in the event of a spill (see Section C.7.8).
- ~ Truck CertificationC Trucks used to haul contaminated materials will have current DOT or Commercial Vehicle Safety Association certification of inspection. Proof of these certifications (normally in the form of a windshield sticker) will be required prior to the performance of work.
- ~ Truck Maintenance ProgramC Trucks used to haul contaminated materials will be maintained in a condition that will avoid spillage. Operating levers controlling hoisting or dumping devices on haulage bodies will be equipped with a latch or other device that will prevent accidental starting or tripping of the mechanism. Tailgates will fit snugly against the dump bodies. Tailgate latching mechanisms will have a secondary back-up system (i.e., the primary latch actuator mechanism will be backed up with a mechanical “cam-over” system that is adjusted to fail positively in the event of a primary latch actuator malfunction; or, the latching mechanism will have an equivalent, acceptable mechanical locking system). All mechanisms will be maintained in proper working order so that the tailgate is securely latched when in a closed position. Worn, damaged, or weakened parts will be replaced with new components that match the original equipment. An inspection and maintenance log, which may be reviewed at any time by DOE, will be kept in the vehicle.
- ~ Maintenance Inspection and Testing ProgramC Trucks will be inspected and tested at the beginning of each day that they are used for hauling contaminated materials. The truck driver will ensure that tailgates, latching mechanisms, and hoisting/dumping devices operate properly.

C.7.8 Spill Response

DOT regulations do not require preparation of a spill response plan for unregulated materials. As a best management practice, however, the transporter will follow certain procedures in the event

of a contaminated material spill. The truck driver will stop the truck and try to secure the leak. The driver will then (1) don an orange vest; (2) place one emergency triangle in front of the truck; (3) place one emergency triangle behind the truck; and (4) notify his/her immediate supervisor and the DOE representative. The DOE representative will determine the extent of the spill (with radiological instrumentation, if needed) and will then require the city of Monticello to recover the spilled material and transport it to the TSF. DOE will ensure that spills are properly managed.

The DOE representative will report the spill to the LTSM Program Manager and will document the spill on the DOEBGJO Incident Report form (GJO 1743). After an investigation into the cause of the spill, the DOE representative will recommend methods for avoiding spills in the future and relay this information to the responsible parties. Spills will be reported in the annual inspection reports.

C.7.9 Temporary Storage Facility

DOE will construct a TSF either near the Monticello repository site or at the Monticello Millsite to allow for future management of radiologically contaminated materials generated during LTSM activities. Because the TSF will be owned and managed by DOE, it will be operated in accordance with 10 CFR 835, "Occupational Radiation Protection." The TSF will consist of several features, including six 13-yd/roll-off bins for storing radiologically contaminated materials containing Ra-226 concentrations less than 130 pCi/g and unsurveyed materials; a Drum Storage Area for storing radiologically contaminated material containing Ra-226 concentrations greater than 130 pCi/g, and a Hazardous Substance Area, for temporarily storing radiologically contaminated material that is mixed with a hazardous substance (Figure CB3). If larger quantities of material containing Ra-226 concentrations greater than 130 pCi/g are found, then the roll-off bins will be used.

TSF Radiological Controls

Access: TSF access will be controlled by a wildlife fence and a locked gate. The DOE representative and a representative from the city of Monticello will have access to the gate key. The key custodian who unlocks the gate will record the following information in the TSF Record Book each time material is brought to the TSF:

- ~ Date
- ~ Time
- ~ Name of driver
- ~ Origin of material being placed in the TSF
- ~ Type of materials (i.e., <130 pCi/g, >130 pCi/g)
- ~ Estimated cubic yardage of material being placed in the TSF

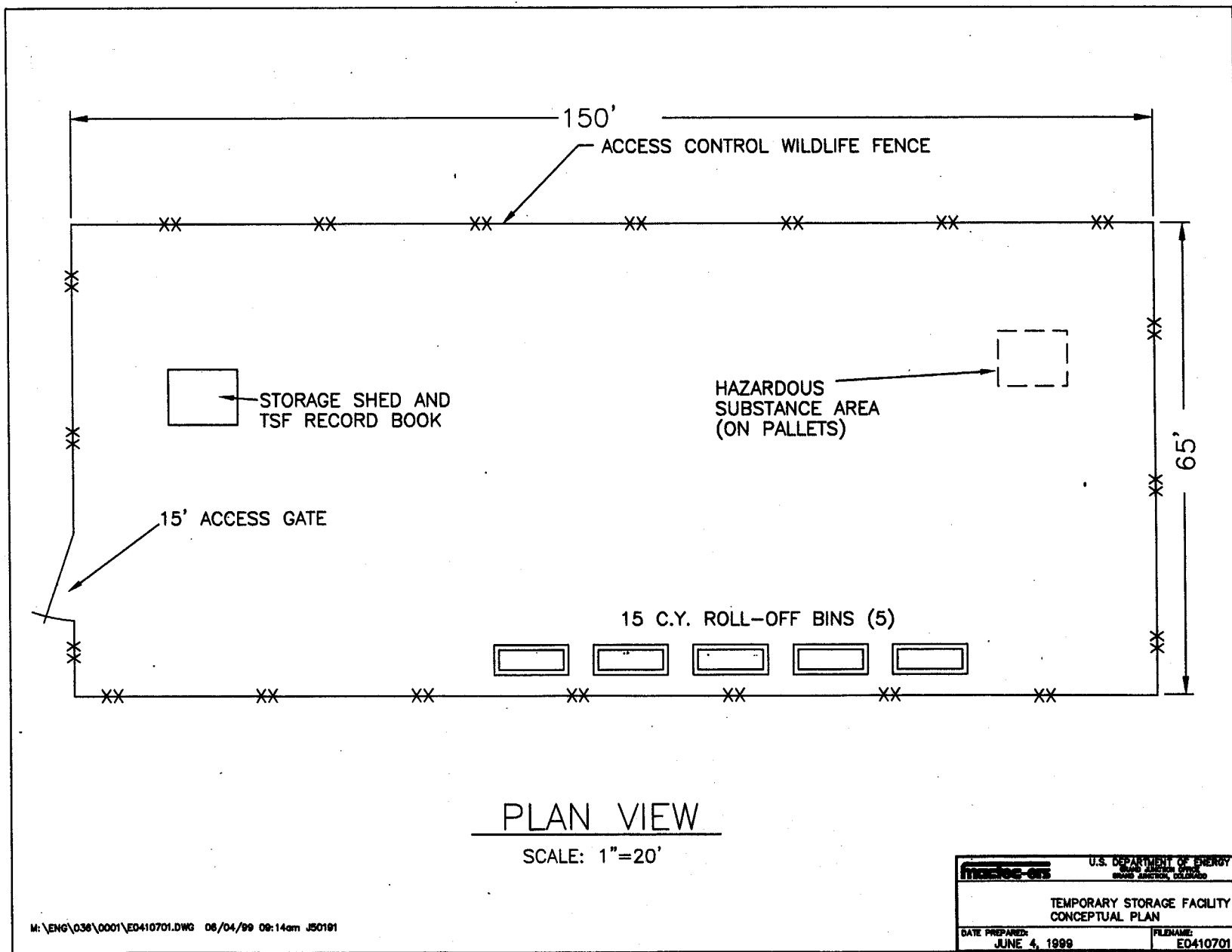


Figure C-3. Temporary Storage Facility Plan

Only the DOE representative and authorized city of Monticello workers (those who have completed the training outlined in Section C.7.6) will be allowed access to the TSF. All other persons must be escorted by the DOE representative.

Posting: Controlled Area signage, as defined by the *Grand Junction Office Site Radiological Control Manual* (MACTECBERS and WASTRENBGJ Manual GJO 3), will be posted along the TSF fence and gate. A sign stating “Low-Level Radioactive Soil: This receptacle (or area) contains soil and materials contaminated with uranium ore and mill tailings; radioactivity concentrations exceed the environmental cleanup levels specified in 40 CFR 192” will be posted on each container in use in the TSF. Radioactive Material Area signage will be posted in the Drum Storage Area (or on a roll-off bin) when materials exceeding 130 pCi/g of Ra-226 are stored there.

Training: Because the entire TSF will be managed as a Controlled Area, personnel entering the TSF will be required to have completed General Radiological (or Radiological Worker II Training) and LTSM Training or will be escorted by the DOE representative.

Decontamination: When radiologically contaminated materials having Ra-226 concentrations less than 130 pCi/g are transported to the TSF, the bed of the truck used to transport radiologically contaminated material will be shoveled or swept clean of visible solid material after each use. When radiologically contaminated materials having Ra-226 concentrations in excess of 130 pCi/g are transported to the TSF, the truck and other equipment involved will be decontaminated in accordance with the DOE representative’s directives.

Secondary Containment: The slope of the facility will be such that precipitation and snow melt will drain out of the area. The metal roll-off bins and the drums containing material exceeding 130 pCi/g of Ra-226 will be lined with 6-mil-thick plastic. Hazardous substances will be managed in accordance with a plan developed for the specific type of hazardous substance present. Development of this plan is discussed in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

TSF Operations

Radiologically contaminated materials will be brought to the TSF by city workers. Materials having Ra-226 concentrations less than 130 pCi/g will be dumped directly into a roll-off bin, and the bin will be tarped; materials having Ra-226 concentrations in excess of 130 pCi/g will be placed in a container in the Drum Storage Area. If quantities are more than can be stored in the drums, then a roll-off bin will be used.

For permanent disposal of radiologically contaminated materials, DOE will ship these materials to an appropriately licensed facility (e.g., the Cheney Disposal Cell near Whitewater, Colorado, which is owned and operated by DOE). DOE will make shipments when the DOE representative determines that the roll-off bins or Drum Storage Area have reached 75-percent capacity. Shipping will be conducted in accordance with applicable DOT regulations.

DOE will be responsible for maintaining year-round access to and within the TSF. This will be accomplished by using city workers, a local contractor, or a combination of the two.

Inspections

As a best management practice, the DOE representative will conduct quarterly inspections of the TSF. The following will be inspected:

- Condition of containers
- Condition of labels and postings
- Condition of fence.

If replacement or repair of the inspected items is necessary, it will be documented in the inspection report. The next inspection report will note if the actual replacement or repair was made. These reports will be filed in chronological order in the TSF record book.

C.8 CERCLA 5-Year Reviews

DOE will prepare and submit to EPA a report fulfilling the requirements of a Level I CERCLA 5-year review every 5 years until EPA no longer requires the submission of such a report. The purpose of the report will be to evaluate whether the “response action” (i.e., leaving radiologically contaminated materials in place on the supplemental standards properties and implementing contingency actions when contaminated materials are disturbed) remains protective of public health and the environment.

In addition, DOE will evaluate whether its LTSM activities are conducted at an appropriate level of effort to ensure protection of public health and the environment. The CERCLA 5-Year Review Report will be available for public review at DOEBGJO and the DOE representative’s Monticello office. In accordance with EPA guidance (EPA 1991 and 1994), the report will include the following general information.

- I. Background
 - A. Introduction
 1. Name of Site
 2. Reason for 5-Year Review
 3. Level of 5-Year Review
 4. Summary Results
 5. Community Relations Activities
 - B. Site History
 1. Location
 2. Nature of Hazards
 - C. Remedial Objectives
 1. Remedy Selected
 2. Applicable or Relevant and Appropriate Regulations
 3. Remedial Action Conducted
- II. Site Conditions
 - A. Summary of 5-Year Review
 1. Scope
 2. Level of Review

- B. Review Results
 - 1. Data Review
 - 2. Site Visit
 - 3. Monitoring Results
 - 4. Areas of Noncompliance
- III. Recommendations
 - A. Statement of Protectiveness
 - B. Recommended Activities
 - C. Implementation Requirements
 - D. Next Review
- IV. Signature Block

C.9 Records

DOE will maintain a permanent file at the DOEBGJO office in Grand Junction, Colorado, that will contain information and data associated with the supplemental standards properties. Information in the file will be available for review by EPA, the UDEQ, and the public. Complete and accurate reports concerning supplemental standards surveillance, maintenance, and inspection activities will be maintained in accordance with the procedures in 41 CFR 101.11, 5Archives, Records, and Records Management, 4the DOEBGJO contractor's *General Management Procedures* (MACTECBERS Manual MACB1000) and the GJO LTSM working file index. DOE also will keep a duplicate of the permanent file at Monticello for local reference and use. The permanent file for the supplemental standards properties will include the following:

- The LTSM plans for supplemental standards properties.
- Applications for all supplemental standards properties.
- Legal descriptions and maps of supplemental standards properties.
- Legal documentation of DOE's agreements, including copies of cooperative agreements for financial assistance, memoranda of understanding, deed annotations, restrictive easements, and relevant remedial action agreements.
- Final construction designs for locations where partial remediation occurred.
- Pertinent design and construction documents and drawings.
- Radiological as-built drawings, where relevant.
- Site atlas (vicinity, topographic, and base maps).
- Baseline and aerial photographs.
- Routine surveillance reports.
- Annual inspection reports and records.

- CERCLA 5-Year Review Reports.
- Preliminary assessments, reports, and records; follow-up or contingency inspection reports.
- Custodial maintenance or repair reports and records.
- Corrective action plans, reports, and records.
- Quality Assurance Program Plan.
- Shipping records.

The permanent DOEBGJO and Monticello site files will be updated as necessary after completion of the annual site inspections.

C.10 Health and Safety

Health and safety plans are required by 29 CFR 1910.120, “Hazardous Waste Operations and Emergency Response,” for use at uncontrolled hazardous waste sites. Because health risks associated with the potential activities at the P/J properties have been analyzed and found to be acceptable (see Section 4.0, “Health Risk Assessments” of the supplemental standards applications) and because the disposition of contaminated materials will have been approved (upon approval of these applications), the activities associated with this LTSM plan will not fall within the scope of 29 CFR 1910.120. Thus, a project health and safety plan will not be prepared for these LTSM activities. Certain procedures and requirements normally associated with a health and safety plan, such as site control, spill response, training requirements, and transportation procedures, are specified for LTSM activities in Section C.7, “Contingency Action Plan,” of this document.

C.11 Quality Assurance

The *Long-Term Surveillance and Maintenance Program Quality Assurance Program Plan* (QAPP) (DOE 1996), which covers all LTSM Program sites assigned to DOEBGJO, will govern the activities associated with LTSM activities on the P/J properties. The QAPP specifies requirements for:

- Program planning.
- Program activities, including inspections, site maintenance, corrective actions, and emergency responses.
- Record-keeping and preservation of records.
- Surveillance and audits of program compliance with quality assurance requirements.

Project-level quality control requirements will be specified in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties*.

C.12 Procedures for Revising and Updating the LTSM Plan

This LTSM Plan may be revised, updated, or renewed upon concurrence of EPA and UDEQ. Portions of the document may be terminated by mutual written agreement of the parties, or by any one of the parties, upon 30-day notice to the other party(ies) and upon concurrence of EPA and UDEQ. EPA and UDEQ reviews will be conducted in accordance with the provisions of the *Monticello Site Federal Facility Agreement* (FFA) (DOE 1988b). DOE will not be relieved from continuing obligations under CERCLA, even if all involved parties agree to invalidate this LTSM Plan. EPA and UDEQ can require and provide funding for studies if conditions change.

C.13 Reservation of Rights

Nothing in this document will be construed to abridge the rights of the parties under CERCLA, the FFA negotiated in 1988, or other applicable Federal and State laws.

References

MACTECBERS. Manual MACB1000, *General Administrative Procedures*, Grand Junction, Colorado.

MACTECBERS. Manual MACB3000, *Field Services Procedures Manual*, Grand Junction, Colorado.

MACTECBERS and WASTRENBGJ. Manual GJO 3, *Grand Junction Office Site Radiological Control Manual*, Grand Junction, Colorado.

U.S. Code of Federal Regulations

Title 10, "Energy"

Title 29, "Labor"

Title 40, "Protection of Environment"

Title 41, "Public Contracts and Property Management"

U.S. Department of Energy, 1988a. Direction from John E. Baublitz, Acting Director, Office of Remedial Action and Waste Technology, Office of Nuclear Energy, Washington, D.C. to Don Ofte, Manager, Idaho Operations Office, November 30.

_____, 1988b. *Monticello Site Federal Facility Agreement*, U.S. Environmental Protection Agency Region VIII, State of Utah Department of Health, and U.S. Department of Energy, agreement pursuant to Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, effective February 24, 1989.

_____, 1996. *Long-Term Surveillance and Maintenance Program Quality Assurance Program Plan*, MACB2152, Revision 0, prepared by MACTECBERS for U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, December.

U.S. Department of Energy, 1997. *Monticello Projects Health and Safety Plan*, MACBMRAP 1.3.4, prepared by MACTECBERS for U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, June.

U.S. Department of Transportation, 1996. *Exemption Number DOT-E 10594 (PTE), 3rd Revision* (September 3, 1996), authorized on October 11, 1996; on file at MACTECBERS, Grand Junction, Colorado.

U.S. Environmental Protection Agency, 1991. *Structure and Components of Five-Year Reviews*, OSWER Directive 9355.7B02, Office of Solid Waste and Emergency Response, Hazardous Site Control Division, Washington, D.C., May 23.

———, 1994. *Supplemental Five-Year Review Guidance*, OSWER Directive 9355.7B02A, Office of Solid Waste and Emergency Response, Hazardous Site Control Division, Washington, D.C., July 26.

Attachment C–1

**Outline for *LTSM Operating Procedures for
Monticello Supplemental Standards Locations***

This page intentionally blank

Outline for LTSM Operating Procedures for Monticello Supplemental Standards Locations

Glossary

- 1.0 Manual Overview
 - 1.1 Background
 - general overview; reference LTSM Plan, which is an appendix
 - 1.2 Responsibilities and Authorities
 - identify personnel, agencies, and contacts and describe general responsibilities and authorities
 - establish the DOE representative's work schedule and need for availability
 - establish turnover procedures when work is transferred to support personnel
- 2.0 Routine Surveillances
 - 2.1 Responsible Party
 - 2.2 Surveillance Routine—describe for each supplemental standard property
 - 2.3 Types of Surveillance Observations
- 3.0 Recording Observations
 - 3.1 Record Book Entries
 - how
 - what
 - when
 - 3.2 Photographic Records
 - how
 - what
 - when
- 4.0 Annual Inspections
 - 4.1 Responsible Party
 - 4.2 Inspection Routine—describe for each supplemental standard property
 - 4.3 Types of Inspection Observations—refer to checklists in LTSM Plan
 - 4.4 Requirements for Recording Observations
- 5.0 Reports
 - 5.1 Annual Inspection Report
 - define content, distribution, and responsible party
 - 5.2 CERCLA 5-Year Reviews
 - define content, distribution, and responsible party
- 6.0 Records Management
 - 6.1 Definition and Types of Records—working file index will be in appendix
 - 6.2 Record Distribution and Filing Requirements
 - 6.3 Responsible Parties

- 7.0 Radiological Surveys
 - 7.1 Responsible Party
 - 7.2 Procedures for Determining Extent of Contamination
 - 7.3 Comparison of Readings to Cleanup Standards
 - 7.4 Calibration and Use of the Eberline E-600 Ratemeter
 - 7.5 Calibration and Use of the EL-0018B Delta Scintillometer
- 8.0 Suspect Hazardous Substances
 - 8.1 Identification and Determination of Suspect Hazardous Substances
 - 8.2 Removal and Containerization
 - 8.3 Decontamination of Equipment
 - 8.4 Health and Safety
 - 8.5 Transportation
 - 8.6 Management
- 9.0 Radiologically Contaminated Materials in Excess of 130 pCi/g of Ra-226
 - 9.1 Removal and Containerization
 - 9.2 Decontamination of Equipment
 - 9.3 Health and Safety
 - 9.4 Transportation
 - 9.5 Management
- 10.0 Transportation of Radiologically Contaminated Material
 - 10.1 Requirements of DOT Exemption (attach exemption)
 - 10.2 Maintenance Inspection for Equipment
 - 10.3 Spill Prevention Plan
- 11.0 Management of the Temporary Storage Facility
 - 11.1 Attach appropriate procedures from the Radiation Protection Program Plan and the Site Specific Radiological Controls Manual
 - 11.2 Maintenance Inspection for Equipment
- 12.0 Quality Control Requirements
- 13.0 Change Control Process
 - 13.1 Change Levels and Notification Requirements
 - 13.2 Page Change Procedure

Attachment C-2

**Preliminary Inspection Checklist
Annual Site Inspection**

This page intentionally blank

Preliminary Inspection Checklist Annual Site Inspection

Site: Privately Owned Piñon and Juniper Property (MS-00176-VL)

Date Prepared:

Date of Last Inspection:

Type of Inspection: Annual Inspection

Date of Next Inspection:

I. Preparation for the Inspection

- A. Review the *LTSM Plan for Piñon and Juniper Properties*
- B. Review the surveillance records associated with the site.
- C. At the San Juan County Recorder's office, review the property deed, deed annotation, and other information referenced by the property deed (e.g., Radiological As-Built).
- D. Review previous inspection reports, field notes from previous inspections, maps and photographs of the site, and other documents as necessary to become familiar with site history, current conditions at the site, and results of recent maintenance.
- E. Review site access procedures and protocols. Notify the on-site DOE representative and the DOE Project Manager (Mr. Joel Berwick, 970 248-6328).
- F. Review specific observations to be made and problems to be studied or resolved during the inspection.

II. Site Inspection

The inspection team will investigate the following features

- Inspect for erosional features along the publicly accessible perimeter of the properties.
- Determine if ownership of the properties has changed. If property ownership has changed or if a new occupant (such as a renter) resides on the property, visit with the new owners or occupants to ensure that they are aware of the restriction on land use.
- Ensure that the information (e.g., Radiological As-Built) filed at the San Juan County Recorder's office is up to date.

Preliminary Inspection Checklist

Annual Site Inspection

Site: Government-Owned Piñon and Juniper Properties

Date Prepared:

Date of Last Inspection:

Type of Inspection: Annual Inspection

Date of Next Inspection:

I. Preparation for the Inspection

- A. Review the *LTSM Plan for Piñon and Juniper Properties*
- B. Review the surveillance records associated with the site.
- C. At the San Juan County Recorder's office, review the property deeds, restrictive easement, and other information referenced by the property deed (e.g., Radiological As-Builts).
- D. Review previous inspection reports, field notes from previous inspections, maps and photographs of the site, and other documents as necessary to become familiar with site history, current conditions at the site, and results of recent maintenance.
- E. Review site access procedures and protocols. Notify the on-site DOE representative and the DOE Project Manager (Mr. Joel Berwick, 970 248-6328).
- F. Review specific observations to be made and problems to be studied or resolved during the inspection.

II. Site Inspection

The inspection team will investigate the following features:

- A. General Inspection Features
 - access gates
 - access roads
 - entrance and perimeter signs (if any)
 - perimeter fence
- B. Transects
 - erosional features
 - intrusion by livestock
 - change in land use
 - unauthorized construction or excavation activities
 - trash accumulation

- C. Area Adjacent to Fence Perimeter
- change in land use
 - earth movement, erosion, or changes in nearby stream channels
 - new construction or development
 - trash accumulation
- D. Maintenance Requirements
- evaluate the need for further maintenance or repair

Appendix D

Restrictive Easement Area Along Montezuma Creek Long-Term Surveillance and Maintenance Plan

Note: This appendix is excerpted from Appendix C of *MMTS Operable Unit II Application for Supplemental Standards for Upper, Middle, and Lower Montezuma Creek—DOE ID Nos. MP-00951-VL, MP-00990-CS, MP-01084-VL, MG-01026-VL, MG-01027-VL, MG-01029-VL, MG-01030-VL, and MG-01033-VL* 1999 (Document Number Q0012600).

With the exception of the headers, footers, and numbering system, the wording in this appendix is identical to Appendix C of the original document. This appendix is provided to demonstrate continuity with the plans developed at the time of application for supplemental standards.

Updated changes to the administration and quality assurance of the LTSM program are provided in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual*.

LTSM Checklist for OU II Montezuma Creek Soil and Sediment Properties

The Monticello LTSM Representative shall:

1. In the spring and fall of every year, walk the Operable Unit (OU) II restrictive easement area to ensure that habitable structures have not been built and soil material has not been excavated and removed from the area (see Section 2.5).
2. Walk the OU II restrictive easement area after storm events that produce 2.8 inches or more of rain within a 24-hour period (see Section 2.5).
3. If evidence of construction of a habitable structure or removal of materials to locations outside the restrictive easement area is discovered, follow the contingency actions in Section 2.5.5.
4. Record notes and observations in the OU II Soils and Sediments Record Book (see *Long-Term Surveillance and Maintenance Administrative Manual* [DOE 2001a], Section 9.0).
5. On an annual basis, determine if property ownership or habitation has changed and if so, inform the new owner and/or inhabitant of the land use restrictions associated with the property.

Contents

D.1	Administration of the LTSM Program.....	DB7
D.2	Institutional Controls	DB8
D.3	Biannual Inspection	DB8
D.4	Annual Reports	D-9
D.5	Contingency Action Plan	D-9
D.6	CERCLA 5-Year Reviews.....	DB10
D.7	Records	D-11
D.8	Health and Safety	D-12
D.9	Quality Assurance.....	D-12
D.10	Procedures for Revising and Updating the LTSM Plan.....	D-13
D.11	Reservation of Rights.....	D-13
	References.....	D-13

This page intentionally blank

Introduction

The U.S. Department of Energy (DOE) is proposing to apply supplemental standards to contaminated soil and sediment within Operable Unit (OU) II, which is located on private properties along Upper, Middle, and Lower Montezuma Creek. If supplemental standards are accepted by the U.S. Environmental Protection Agency (EPA) and State of Utah Department of Environmental Quality (UDEQ), radiologically contaminated material will remain in place on the properties, and a long-term surveillance and maintenance (LTSM) management strategy will be implemented. For the purposes of this document, ***radiologically contaminated material*** is defined as the residual radioactive material resulting from DOE-related uranium and vanadium ore processing that contains radium-226 (Ra-226) concentrations exceeding background by more than 5 picocuries per gram (pCi/g) in the surficial 15 centimeters of soil average over 100 square meters, or by more than 15 pCi/g in successively deeper 15-centimeter layers. These threshold values are referred to as the EPA cleanup standards and are promulgated by 40 CFR 192. The LTSM management strategy will include

- Implementing institutional controls by placing restrictive easements on land use.
- Conducting walk-through visual inspections.
- Preparing reports for regulatory agencies.
- Keeping records.

Sections D.2 through D.12 define and describe these management actions.

D.1 Administration of the LTSM Program

Within DOE Headquarters, overall responsibility and authority for Monticello activities rests with the Assistant Secretary for Environmental Management, acting through the Office of Southwestern Area Programs, Division of Off-Site Programs. Field management responsibility and authority at Monticello are delegated to the Manager of the DOE Albuquerque Operations Office, acting through the Assistant Manager for Environmental/Project Management. The authority, responsibility, and accountability for implementing and administering the Monticello projects are, in turn, delegated to the Manager of the DOE Grand Junction Office (GJO), who assigns coordination, management, and operational staff as necessary. The Office of Chief Counsel at the Operations Office provide financial, procurement, and real-estate management support.

DOE–GJO was assigned responsibility for the LTSM Program on January 1, 1989 (DOE 1988a). Because the Monticello sites were once part of DOE’s former Surplus Facilities Management Project, all long-term activities at Monticello were specifically included in the scope of the LTSM Program. Upon EPA’s and UDEQ’s approval of the OU II Soil and Sediment supplemental standards application, administrative and operation responsibilities for the properties will be implemented and administered under the existing remedial action programs in Monticello. Administration of LTSM is expected to be transferred to the LTSM Program on October 1, 2001.

When administration of the LTSM activities is transferred to the LTSM Program, the DOE–GJO contact for actions associated with the supplemental standards properties will be a Monticello-based DOE representative, who may be a DOE employee or a contractor to DOE. The representative will reside in Monticello on a full-time basis and will be on call 24 hours a day, 7 days a week. When the representative leaves the Monticello area, he or she will ensure that backup personnel are available to perform the duties required of the representative. The contact address will be:

DOE Representative (LTSM Program)
U.S. Department of Energy
7031 South Highway 191
P.O. Box 909
Monticello, UT 84535
(435) 587-4011

D.2 Institutional Controls

The U.S. Army Corps of Engineers, under DOE review, has drawn up institutional controls in the form of restrictive easement agreements for the properties located along Montezuma Creek where radiological contamination will remain in place. By signing their respective restrictive easement agreement, property owners (and successors) agree to the terms described in the easement in perpetuity. These terms include:

- No development for or construction of temporary or permanent habitable structures may occur in areas on the properties specified by the restrictive easement. A “habitable structure” is defined as a structure that is suitable for persons to live or reside in.
- No soils or similar materials may be removed from areas on the properties specified by the restrictive easements for use outside the restrictive easements.

The easements also grant DOE, EPA, and UDEQ, as well as their authorized representatives, contractors, and subcontractors, a right of entry in, across, and over the land within the easements for the purposes of characterization and remediation activities, if necessary. The easements may be removed when DOE has determined that the site meets regulatory standards, as concurred upon by EPA and UDEQ. The CERCLA 5-Year Review Report will include an evaluation of whether the easement remains protective of human health and whether it is appropriate that it be removed (see Section D.6).

D.3 Biannual Inspection

Two times a year, in the spring and in the fall, DOE will conduct a walk-through inspection of the private properties along Upper, Middle, and Lower Montezuma Creek. The spring inspection will be conducted by the on-site DOE representative; the fall inspection will be carried out by a qualified LTSM staff member along with the DOE representative. The primary purpose of the inspection is to look for evidence of building construction, excavation, or removal of materials from in and along Montezuma Creek. Additionally, any other man-made disturbances of the land, such as discing or plowing, will be noted during the inspection. The observations made during the inspections will be used to determine if the restrictive easement agreements are being

violated. Additional inspection may be prompted by significant precipitation and flooding events. Detailed procedures for conducting annual inspections are described in the *LTSM Operating Procedures for Monticello Supplemental Standards Properties* (in preparation).

At the time of the fall inspection, the inspection team will review the property deeds and other information on file with the San Juan County Recorder. Reviews of the information will determine if property ownership has changed. If property ownership has changed or if a new occupant (such as a renter) resides on the property, the inspection team will visit with the new owners or occupants to ensure that they are aware of the restriction on land use.

D.4 Annual Reports

Upon completion of the fall inspection as described in Section D.3, DOE (or an LTSM staff member) will complete an annual inspection report. The report will contain the results of both walk-through inspections and the review of property records. Areas of concern or special problems will be noted.

Within 90 days after completion of the fall inspection, an inspection report will be prepared and submitted to EPA and UDEQ. Annual inspection reports will be available for public review at DOE–GJO and the DOE representative’s Monticello office. These annual reports, along with supporting documentation in the permanent files, will serve to (1) document the performance history of the supplemental standards properties; (2) provide DOE, EPA, and UDEQ with the information necessary to forecast future surveillance and maintenance needs; and (3) provide information to the public to demonstrate that site integrity is being maintained. The annual reports will contain the following information:

- Narrative of site inspections, results, conclusions, and recommendations.
- Relevant supporting documentation (e.g., field notes, sketches)
- Site inspection maps, and other drawings, maps, or figures, as required.
- Inspection photographs and a photographic log sheet if new or changed conditions warrant photographic documentation.
- Recommendations for follow-up inspections or reports, if required.

D.5 Contingency Action Plan

If DOE discovers evidence of construction of a habitable structure or removal of contaminated materials to locations outside the restrictive easements, DOE will be required to take the following specific contingency actions:

- The DOE representative will contact the individual(s) that is in violation of the restrictive easement in person to explain the violation and request that the activity be discontinued. A follow-up request will be made in writing and become part of the project file.

- If the activity involves removal of contaminated material from the premises, DOE will attempt to locate the contaminated material and assess the degree of contamination that exists. At that time, a decision will be made regarding final disposition of the material. A follow-up inspection will be conducted within a reasonable period of time to determine if the activity has ceased. If the activity has been discontinued, this fact will be noted and included in the next annual inspection report.
- If the violating activity persists, DOE will serve legal notice through its Office of Chief Counsel (in Albuquerque) to the violating party to cease the activity. A follow-up inspection will be conducted within a reasonable period of time to determine if the activity has ceased. If the activity has been discontinued, this fact will be noted and included in the next annual inspection report.
- If the city of Monticello or a utility company becomes aware of required maintenance along utility lines located within the Upper, Middle, or Lower Montezuma Creek area, then the city of Monticello Streets and Utilities LTSM Plan (DOE 1999) procedures will be followed.

D.6 CERCLA 5-Year Reviews

DOE will prepare and submit to EPA a report fulfilling the requirements of a Level I CERCLA 5-year review every 5 years until EPA no longer requires the submission of such a report. The purpose of the report will be to evaluate whether the “response action” (i.e., leaving radiologically contaminated materials in place on the supplemental standards properties and implementing contingency actions when institutional controls are breached) remains protective of public health and the environment.

In addition, DOE will evaluate whether its LTSM activities are conducted at an appropriate level of effort to ensure protection of public health and the environment. The CERCLA 5-Year Review Report will be available for public review at DOE–GJO and the DOE representative’s Monticello office. In accordance with EPA guidance (EPA 1991 and 1994), the report will include the following general information.

I. Background

A. Introduction

1. Name of Site
2. Reason for 5-Year Review
3. Level of 5-Year Review
4. Summary Results
5. Community Relations Activities

B. Site History

1. Location
2. Nature of Hazards

C. Remedial Objectives

1. Remedy Selected
2. Applicable or Relevant and Appropriate Requirements
3. Remedial Action Conducted

- II. Site Conditions
 - A. Summary of 5-Year Review
 - 1. Scope
 - 2. Level of Review
 - B. Review Results
 - 1. Data Review
 - 2. Site Visit
 - 3. Monitoring results (if applicable)
 - 4. Areas of Noncompliance
- III. Recommendations
 - A. Statement of Protectiveness
 - B. Recommended Activities
 - C. Implementation Requirements
 - D. Next Review
- IV. Signature Block

D.7 Records

DOE will maintain a permanent file at the DOE–GJO office in Grand Junction, Colorado, that will contain information and data associated with the supplemental standards properties. Information in the file will be available for review by EPA, UDEQ, and the public. Complete and accurate reports concerning biannual inspections and other required activities will be maintained in accordance with the procedures in 41 CFR 101.11, “Archives, Records, and Records Management,” the DOE–GJO contractor’s *General Administrative Procedures* (MACTEC–ERS Manual MAC–1000) and the GJO LTSM working file index. DOE also will keep a duplicate of the permanent file at Monticello for local reference and use. The permanent file for the OU III soil and sediment area properties will include the following:

- The LTSM plan for the OU II Upper, Middle, and Lower Montezuma Creek properties.
- The OU II application for supplemental standards.
- Legal descriptions and maps of the OU II Upper, Middle, and Lower Montezuma Creek properties.
- Legal documentation of DOE’s agreements, including restrictive easement agreements.
- Final construction designs for locations where partial remediation occurred.
- Pertinent design and construction documents and drawings.
- Radiological as-builts of remediation completed.
- Site atlas (vicinity, topographic, and base maps).
- Baseline and aerial photographs.

- Biannual inspection reports.
- Annual inspection reports and records.
- CERCLA 5-Year Review Reports.
- Follow-up or contingency inspection reports.
- The *Alternatives Analysis* (DOE 1998a) and *Action Memorandum* (DOE 1998b) for OU III soil and sediment removal action.
- *Quality Assurance Program Plan*.

The permanent DOE–GJO and Monticello site files will be updated as necessary after completion of the annual site inspections.

D.8 Health and Safety

Formal health and safety plans are required by 29 CFR 1910.120, “Hazardous Waste Operations and Emergency Response,” for use at uncontrolled hazardous waste sites; however, under the LTSM Plan, the OU III soil and sediment area is not an uncontrolled hazardous waste site—controls are established by the restrictive easements and by DOE’s LTSM procedures. Because health risks associated with the proposed LTSM activities in the OU III soil and sediment area do not “involve employee exposure or the reasonable possibility for employee exposure to safety or health hazards” (29 CFR 1910.120) and because the disposition of contaminated materials will have been approved and completed (upon approval of these applications), the activities associated with this LTSM Plan will not fall within the scope of 29 CFR 1910.120. Thus, a formal health and safety plan will not be prepared for these LTSM activities. However, DOE recognizes the importance of health and safety and discusses health and safety issues in its *LTSM Operating Procedures for Monticello Supplemental Standards Properties* (in preparation).

D.9 Quality Assurance

The *Long-Term Surveillance and Maintenance Program Quality Assurance Program Plan* (QAPP) (DOE 1996), which covers all LTSM Program sites assigned to DOE–GJO, will govern the activities associated with LTSM activities at the OU II Upper, Middle, and Lower Montezuma Creek properties. The QAPP specifies requirements for:

- Program planning.
- Program activities, including inspections and corrective actions.
- Record-keeping and preservation of records.
- Surveillance and audits of program compliance with quality assurance requirements.

D.10 Procedures for Revising and Updating the LTSM Plan

This LTSM Plan may be revised, updated, or renewed upon concurrence of EPA and UDEQ. Portions of the document may be terminated by mutual written agreement of the parties, or by any one of the parties, upon 30-day notice to the other party(ies) and upon concurrence of EPA and UDEQ. EPA and UDEQ reviews will be conducted in accordance with the provisions of the *Monticello Site Federal Facility Agreement* (FFA) (DOE 1988b). DOE will not be relieved from continuing obligations under CERCLA, even if all involved parties agree to invalidate this LTSM Plan. EPA and UDEQ can require studies if conditions change.

D.11 Reservation of Rights

Nothing in this document will be construed to abridge the rights of the parties under CERCLA, the FFA negotiated in 1988, or other applicable Federal and State laws.

References

MACTEC-ERS. Manual MAC-1000, *General Administrative Procedures*, Grand Junction, Colorado.

U.S. Code of Federal Regulations

Title 29, "Labor"

Title 40, "Protection of Environment"

Title 41, "Public Contracts and Property Management"

U.S. Department of Energy, 1988a. Direction from John E. Baublitz, Acting Director, Office of Remedial Action and Waste Technology, Office of Nuclear Energy, Washington, D.C. to Don Ofte, Manager, Idaho Operations Office, November 30.

———, 1988b. *Monticello Site Federal Facility Agreement*, U.S. Environmental Protection Agency Region VIII, State of Utah Department of Health, and U.S. Department of Energy, agreement pursuant to Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1986, as amended by the Superfund Amendments and Reauthorization Act of 1986, effective February 24, 1989.

———, 1996. *Long-Term Surveillance and Maintenance Program Quality Assurance Program Plan*, MAC-2152, Revision 0, prepared by MACTEC-ERS for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, December.

———, 1998a. *Monticello Mill Tailings Site, Operable Unit III, Alternatives Analysis of Soil and Sediment*, GJO-97-10-TAR, prepared by MACTEC-ERS for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

———, 1998b. *Action Memorandum: Request for a Non-Time Critical Removal Action at the Monticello Mill Tailings National Priorities List Site, Operable Unit III*, prepared by MACTEC-ERS for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, June.

U.S. Department of Energy, 1999. Monticello Vicinity Properties, Application for Supplemental Standards for City of Monticello Streets and Utilities, GJO-98-68-TAR, prepared by MACTEC-ERS for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January.

U.S. Environmental Protection Agency, 1991. *Structure and Components of Five-Year Reviews*, OSWER Directive 9355.7-02, Office of Solid Waste and Emergency Response, Hazardous Site Control Division, Washington, D.C., May 23.

———, 1994. *Supplemental Five-Year Review Guidance*, OSWER Directive 9355.7-02A, Office of Solid Waste and Emergency Response, Hazardous Site Control Division, Washington, D.C., July 26.